safety-kleen

February 1, 1996

Via Federal Express
Airbill No. 8862861884

Mr. Robert Senga
California Environmental Protection Agency
Department of Toxic Substances Control
Facility Permitting Branch
245 W. Broadway, Suite 425
Long Beach, CA 90802-4444

Vol. I + II

RE: **RCRA Facility Investigation Work Plan**
Safety-Kleen Corp.
400 Market Street
Oakland, California
EPA ID No. CAD053044053

Dear Mr. Senga:

2-1-96

Safety-Kleen Corp. (Safety-Kleen) has prepared the enclosed *RCRA Facility Investigation Work Plan* (Work Plan) for the above-referenced facility. The Work Plan has been prepared to satisfy the requirements of Section V.H.1. of the facility's hazardous waste facility permit (Part B Permit). This Work Plan has been compiled to summarize the data acquired by Safety-Kleen during the investigation of the extent of potential releases to the subsurface from solid waste management units (SWMUs) and an area of concern (AOC) identified in the *RCRA Facility Assessment* (RFA). As requested by the Department of Toxic Substances Control (DTSC), this Work Plan addresses the comments in the DTSC correspondence dated January 5, 1995. Specifically, a series of cross sections have been added as Figures 4, 5 and 6.

No additional information regarding the definition of the source for an upgradient TCE plume has been provided, as Safety-Kleen believes it is not our responsibility to pursue the responsible party. Groundwater data provided from wells MW-10 (abandoned) and MW-4 have consistently shown TCE migrating onto the Safety-Kleen property and surrounding area from the upgradient direction. Historical groundwater elevation data and laboratory analytical data presented in this Work Plan and previous reports from the site, more than adequately define that the TCE is not a Safety-Kleen related release.

Additionally, no changes to the Health and Safety Plan (HASP - Appendix B) have been made. Safety-Kleen is confident the plan adequately addresses concerns regarding physical and chemical hazards, including their toxicological effects and their exposure limits as listed in the table on page 1 of the HASP. Procedures for spill containment are included in the Facility Contingency Plan and are in effect at all times at the facility.

1000 NORTH RANDALL ROAD ELGIN, ILLINOIS 60123-7857 PHONE 708/697-8460 FAX 708/468-8500

Safety-Kleen believes the submittal of the Work Plan should adequately fulfill the facilities RFI requirements without conducting additional field investigations. Please feel free to contact me regarding any questions or comments related to the Work Plan or the status of the Oakland facility at (503) 655-2769.

Sincerely,

Greg Hoehn

for Chip Prokop
Senior Project Manager - Remediation
Safety-Kleen Corp.

Enclosure - (3 copies)

cc: Keith Marcott, Safety-Kleen Corp.
Scott Davies, Safety-Kleen Corp.
Jennifer Eberle, Alameda County
Branch Environmental File
Greg Hoehn, *SECOR*

VOLUME I

RCRA FACILITY INVESTIGATION WORK PLAN
SAFETY-KLEEN CORP.
400 MARKET STREET
OAKLAND, CALIFORNIA
EPA I.D. No. CAD053044053

***SECOR* Job No. 70005-009-10**

2-1-96

SECOR
International Incorporated

RCRA FACILITY INVESTIGATION WORK PLAN
SAFETY-KLEEN CORP.
400 MARKET STREET
OAKLAND, CALIFORNIA
EPA I.D. No. CAD053044053

***SECOR* Job No. 70005-009-10**

Prepared For:
Safety-Kleen Corp.
16540 S.E. 130th Street
Clackamas, Oregon 97015

Submitted By:
SECOR International Incorporated
1390 Willow Pass Road
Suite 360
Concord, California 94520

February 1, 1996

REGISTERED GEOLOGIST
PAUL D. HORTON
Exp 9/96
No. 5435
STATE OF CALIFORNIA

Prepared By:

Greg D. Hoehn
Project Manager

Reviewed By:

Paul D. Horton, R.G., #5435
Principal Hydrogeologist

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Safety-Kleen Corp. (Safety-Kleen) has prepared this Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Work Plan) for the Safety-Kleen facility located at 400 Market Street in Oakland, Alameda County, California. The site location and site plan are shown on Figures 1 and 2. This Work Plan was developed in accordance with Safety-Kleen's Hazardous Waste Facility Permit (ID No. CAD053044053) (Part B Permit) which became effective on March 29, 1992. The RCRA Facility Assessment (RFA) identified three solid waste management units (SWMUs) and one area of concern (AOC) at the facility. The Corrective Action Module of the Part B Permit (Section V), specified the need to submit a RCRA Facility Investigation (RFI) Work Plan to assess impacts related to the three SWMUs (SWMU No. 1, SWMU No. 2, SWMU No. 3) and the AOC (AOC No. 1). The location of the SWMUs and AOC are shown on Figure 3.

Safety-Kleen has conducted extensive site characterization activities, replacement of the underground storage tank (UST) systems and interim remedial measures in the vicinity of the former and existing USTs. Preliminary assessment activities were conducted in May 1986 in the vicinity of the former USTs by drilling three soil borings and converting two of the borings to groundwater monitoring wells (CWC-HDR, 1986).

Safety-Kleen conducted a soil-gas survey in June 1988 to assess the areal extent of subsurface impact and to aid in locating the installation of additional groundwater monitoring wells. In July 1988, nine monitoring wells were installed on and around the site. After the installation, Safety-Kleen initiated a quarterly groundwater monitoring and sampling program and implemented interim measures to recover separate-phase product from the water table (Groundwater Technology, Inc. (GTI), September 1988).

In August and September 1989, four additional groundwater monitoring wells were installed. Three wells were installed off-site and one deep monitoring well (70 feet) was installed on site. A soil-vent feasibility test was conducted in January 1990 to evaluate the applicability of using soil-venting as a soil remediation technique. Additionally, a ½-mile radius well survey was conducted. No private, municipal or industrial wells were located within a ½-mile radius (GTI, June 1990).

From May through July 1990, the former single walled USTs (two 6,000-gallon waste mineral spirits and one 10,000-gallon mineral spirits UST) were replaced with the two existing double walled 12,000-gallon USTs. The new waste mineral spirits UST has been designated as SWMU No. 2 and the new mineral spirits UST has been designated as AOC No. 1. During the UST replacement, a total of 984 tons of soil were excavated and transported to a rotary kiln for thermal destruction of volatile hydrocarbons. In conjunction with the tank installations, soil vapor extraction (SVE) system piping and a product recovery well were installed (GTI, September 1990).

A system to extract and treat soil vapor began operation in June 1993. The SVE system consists of seven horizontal vapor extraction lines plumbed to the vapor abatement device (Figure 7). From June 1993 through November 1994, the vapor abatement system consisted of a regenerative polymer adsorption system followed by a carbon polish (*SECOR*, October 1993).

Currently, the SVE system is being modified to operate as a carbon adsorption system. Quarterly groundwater monitoring, sampling and reporting is ongoing.

This Work Plan has been prepared to supplement the existing site data accumulated since May 1986. The existing site data should provide adequate characterization of the SWMUs and AOC identified in the RFA. Characterization of the drum storage area (SWMU No. 1) will be conducted when facility closure or partial closure is conducted.

This RFI Work Plan is intended to satisfy the requirements specified in Section V.H.1. of the Part B Permit. Additional investigations, if required, will be designed to assess data gaps identified in the RFI Report, or to collect additional data that will be necessary to adequately define potential corrective measures for the site, if required.

The purpose of this work plan is to provide a detailed discussion of the activities planned and procedures to be followed during the RFI. The procedures to be used during the RFI, including sampling methods, analytical procedures, and sample handling protocols were developed using the Interim Final EPA RCRA Facility Investigation (RFI) Guidance dated May 1989.

1.1 Overview of the RFI Process

If the regulatory agency determines that an RFI is necessary, the RFI will be required of the owner or operator either under a permit schedule of compliance or under an enforcement order. The regulatory agency will apply the appropriate regulatory authority and develop specific conditions in permits or enforcement orders. These conditions will generally be based on results of the RFA and will identify specific units or releases needing further investigation. The RFI can range widely from a small specific activity to a complex multi-media study. In any case, through these conditions, the regulatory agency will direct the owner or operator to investigate suspected and/or known releases of concern. The investigation may initially involve verification of suspected releases. If confirmed, further characterization of such releases will be necessary. This characterization includes identification of the type and concentration of hazardous waste or hazardous constituents released, the rate and direction at which the releases are migrating, and the distance and/or media over which releases have migrated.
The RFI also includes interpretation of release characterization data to established health and environmental criteria to determine whether a RCRA Corrective Measures Study (CMS) is necessary. This evaluation is crucial to the RCRA Corrective Action Process and allows the regulatory agency to be satisfied that data and information collected during the RFI adequately describe the release and can be used with a high degree of confidence to make decisions regarding the need for a CMS.

Identifying and implementing interim corrective measures may also be conducted during the RFI. If, in the process of conducting the investigation, a condition is identified that indicates that adverse exposure to hazardous constituents is presently occurring or is imminent, interim corrective measures may be needed. Both the owner or operator and the regulatory agency have a continuing responsibility to identify and respond to emergency situations and to define priority situations that warrant interim corrective measures. If these conditions are identified by the owner or operator, they should be communicated to the regulatory agency at the earliest possible time.

1.2 General RFI Approach

The focus of RFI activities is on delineating potential source areas and the extent of impact in the subsurface from the source areas. The proposed program for the Safety-Kleen Oakland RFI is intended to summarize sufficient existing data on which remedial decisions and corrective measures implementation have been based. Detailed discussions of the procedures that are employed by Safety-Kleen during field activities and quality assurance and quality control (QA/QC) procedures are presented in the Data Objectives/Quality Assurance Project Plan (DO/QAPP) provided as Appendix A. The health and safety protocol for the Oakland facility field activities are presented in the Health and Safety Plan (HASP) included as Appendix B.

No additional field investigation activities are proposed to investigate the SWMUs or AOC at the Oakland facility. Safety-Kleen has conducted extensive site characterization and has implemented corrective measures. Appendix C contains a summary of the site data.

1.2.1 Conceptual Strategy for RFI

This RFI will summarize existing site data which has characterized SWMU No. 2, SWMU No. 3 and AOC No. 1. Assessment of the extent of Safety-Kleen related impacts in the soil with respect to SWMU No. 1, if any, will be conducted as part of the facility closure activities in accordance with the Safety-Kleen Oakland Closure Plan.

Safety-Kleen has implemented corrective measures in the area of the USTs and return and fill shelter (SWMU No. 2, SWMU No. 3 and AOC No.1). If additional corrective measures are deemed necessary, including future corrective measures associated with the drum storage area (SWMU No. 1), Safety-Kleen will address all SWMUs and the AOC as a corrective action management unit (CAMU), if necessary.

1.2.2 Technical Approach

The focus of the RFI activities is on defining potential source areas, the extent of impacts from the site, and on collecting data to evaluate potential corrective measures. The technical procedures implemented during RFI's is detailed in the DO/QAPP included as Appendix A.

1.3 Document Organization

The Data Objectives/Quality Assurance Project Plan, Project Management Plan, the Data Management Plan, and the Health and Safety Plan are major components of the RFI Work Plan. The required plans are included as appendices to this Work Plan. In addition, a Description of Current Conditions and a Community Relations Plan are included as appendices to this Work Plan. The Work Plan is divided into the following main sections:

- Section 1 - Introduction
  This section provides a description of the contents of the Work Plan and the basis for the development of the document. It also summarizes the general investigation approach for the RFI.

- Section 2 - Summary of Existing Information and Data Requirements
  This section provides a description of the facility and a summary of available analytical data. Much of this information is presented in the DOCC as Appendix C. This information is used as the basis for determining additional required data collection activities, if any.

- Section 3 - Scope of Work
  This section provides a detailed description of the proposed activities which will be performed during an RFI, if any.

- Section 4 - Phase II Scope of Work
  This section provides a preliminary description of the activities to be performed during Phase II of an RFI, if necessary.

- Section 5 - Schedule of Implementation
  The anticipated project schedule is provided in this section of the Work Plan.

- Section 6 - References
  Provides a listing of documents referenced within the Work Plan.

- APPENDIX A - Data Objectives/Quality Assurance Project Plan
  This appendix satisfies the requirements of the Sampling and Analysis Plan. The DO/QAPP provides detailed descriptions of the objectives of the field data collection, the field procedures that are used during an RFI including soil sampling, instrument calibration, etc., and also provides detailed descriptions of the sampling and analytical quality assurance protocols to be followed during the RFI, to ensure that data of adequate quality are generated.

- APPENDIX B - Health and Safety Plan
  The Health and Safety Plan provides detailed descriptions of health and safety protocol for field activities and emergency information such as contact personnel and hospital location and route.

- APPENDIX C - Description of Current Conditions
  This appendix provides background information on the facility, the nature and extent of contamination, and interim corrective measures implemented, if any.

- APPENDIX D - Project Management Plan
  This appendix provides a description of how the project is organized and the roles of specific individuals in the project organization.

- APPENDIX E - Data Management Plan
  This appendix outlines procedures for management of data collected during RFI investigations.

- APPENDIX F - Community Relations Plan
  This appendix describes how the public will be informed of environmental investigations and possible future remediation activities conducted at the Safety-Kleen Oakland facility and provides an example of a fact sheet that will be used as part of the Community Relations Plan.

- APPENDIX G - RCRA Facility Assessment Report
  This appendix presents the findings and conclusions of the DTSC's RFA conducted at the Safety-Kleen Oakland facility.

- APPENDIX H - Environmental Assessment/Update Reports
  This appendix presents the findings and conclusions of the assessment activities, tank replacement and corrective measures conducted at the Safety-Kleen Oakland facility.

2.0 SUMMARY OF EXISTING INFORMATION AND DATA REQUIREMENTS

Existing operations information for the facility is primarily contained in the facility's RFA Report and Part B Permit. The information contained in these two documents is primarily a review of facility records and the results of a visual site inspection (VSI) conducted in conjunction with the RFA. Site characterization data has been collected through a series of investigation events.

The existing investigation information obtained at the facility was collected during the various assessment events and during the UST replacement program. A summary of the investigation, tank replacement and interim corrective measures are presented in the Description of Current Conditions (DOCC) included as Appendix C. A copy of the RFA Report is included as Appendix G. Copies of the assessment reports and the tank replacement report are included as Appendix H.

The existing field measurements and laboratory analyses were used to document the site conditions for the RFI process. The specific data requirements and data quality objectives are described in the DO/QAPP attached as Appendix A.

3.0 SCOPE OF WORK

This section presents the scope of work for conducting additional investigation activities during an RFI. The scope of work is based upon Safety-Kleen's understanding of the specifications in the RFA dated September 1990. As described in Section 4.0, the RFA identified three SWMUs and one AOC at the Oakland facility. Figure 3 shows the approximate areas of the SWMUs and AOC. Section V. H. 1. of the Part B Permit specified the need to submit an RFI Work Plan. Safety-Kleen has summarized existing data (Appendix C) and has included site characterization and UST replacement reports in Appendix H.

3.1 Approach to Investigation

The focus of the RFI activities is to define the presence and extent of potential impacts associated with SWMUs and AOC and on collecting data to evaluate potential CMS. Safety-Kleen believes the previous site characterization which has been completed adequately assesses the subsurface in the vicinity of SWMU No. 2, SWMU No. 3 and AOC No. 1. Investigation of SWMU No. 1 will be conducted as part of facility closure or a partial closure activity.

3.2 Summary of Proposed Work

Safety-Kleen does not propose to conduct additional site characterization work at this time.

4.0 PHASE II SCOPE OF WORK

Safety-Kleen does not anticipate the need for any Phase II RFI activities.

5.0 SCHEDULE OF IMPLEMENTATION

This Work Plan is being submitted by February 2, 1996, as requested by the DTSC in correspondence dated January 5, 1996. Safety-Kleen will continue to conduct interim corrective measures as described in Appendix C, in accordance with section V.K. of the Part B Permit. A schedule of the RFI is provided as Figure 8.

6.0 REFERENCES

California Environmental Protection Agency, Department of Toxic Substances Control, June 1993. RCRA Facility Assessment, Safety-Kleen Corporation, 404 Market Street, Oakland, California, EPA Identification Number CAT053044053.

California Environmental Protection Agency, Department of Toxic Substances Control, Safety-Kleen Corporation, Revised Hazardous Waste Facility Permit, effective date March 9, 1992.

Graef, Anhalt, Schloemer & Associates Inc., Fault Analysis of the Safety-Kleen Site, 404 Market Street, Oakland, California.

Groundwater Technology, Inc., September 9, 1988, Interim Update Report, Safety-Kleen Facility, 404 Market Street, Oakland, California.

Groundwater Technology, Inc., June 1990, Update Report, Additional Assessment, 404 Market Street, Oakland, California.

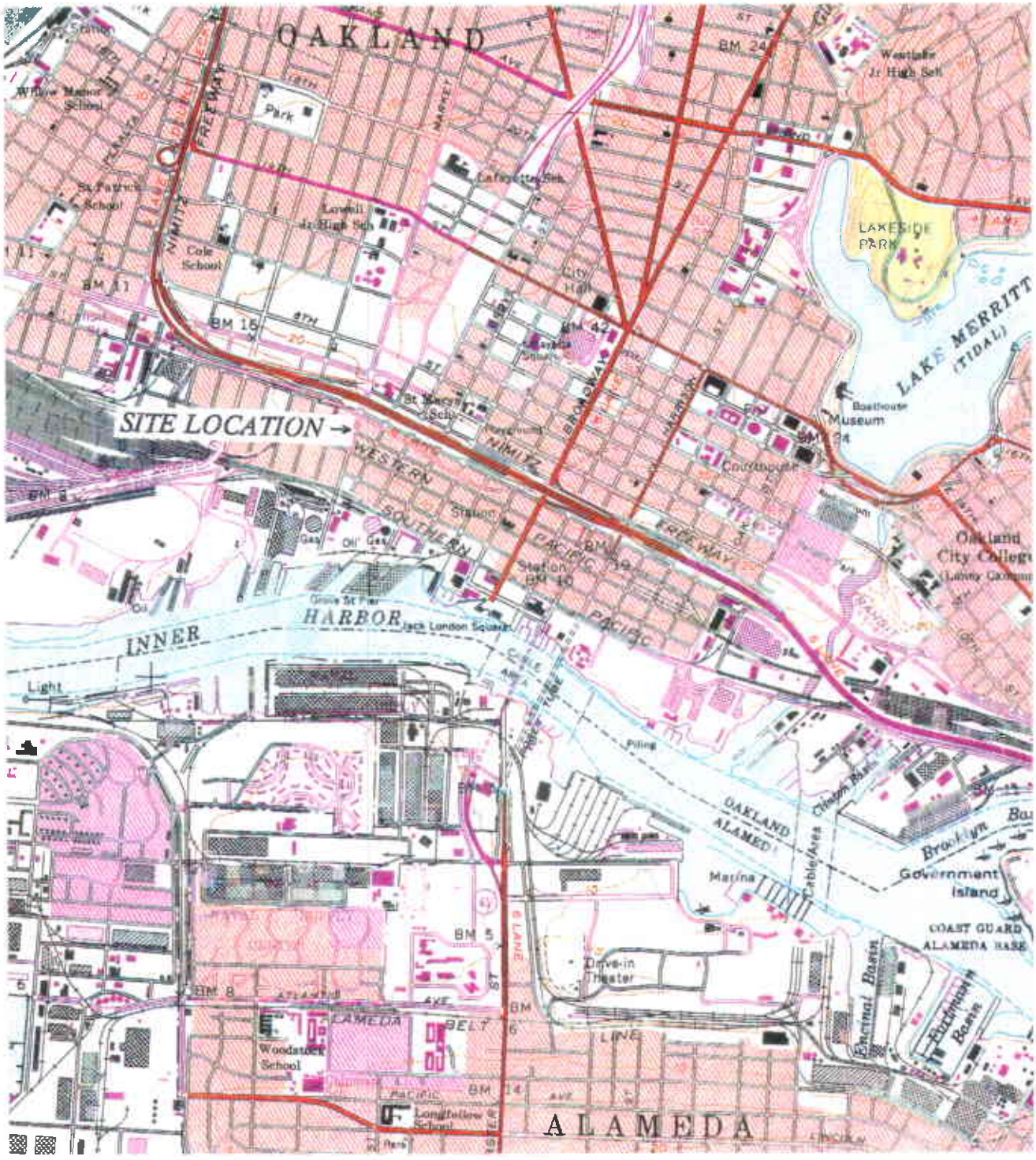
Groundwater Technology, Inc., June 15, 1990, Work Plan For Soil-Vent System and Recovery Well Installation.

Groundwater Technology, Inc., September 1990, Report of Underground Storage Tank Replacement Activities at the Safety-Kleen Oakland Service Center, Oakland, California.

SECOR (formerly Science and Engineering Analysis Corporation), October 1, 1993, Quarterly Groundwater Monitoring and Soil Vapor Extraction Report, 400 Market Street, Oakland, California.

United States Geological Survey, Topographic Map, 7.5-Minute Series, Oakland West Quadrangle, 1959, photo-revised 1980.

OAKLAND WEST QUADRANGLE
California
7.5 Minute Series (Topographic)



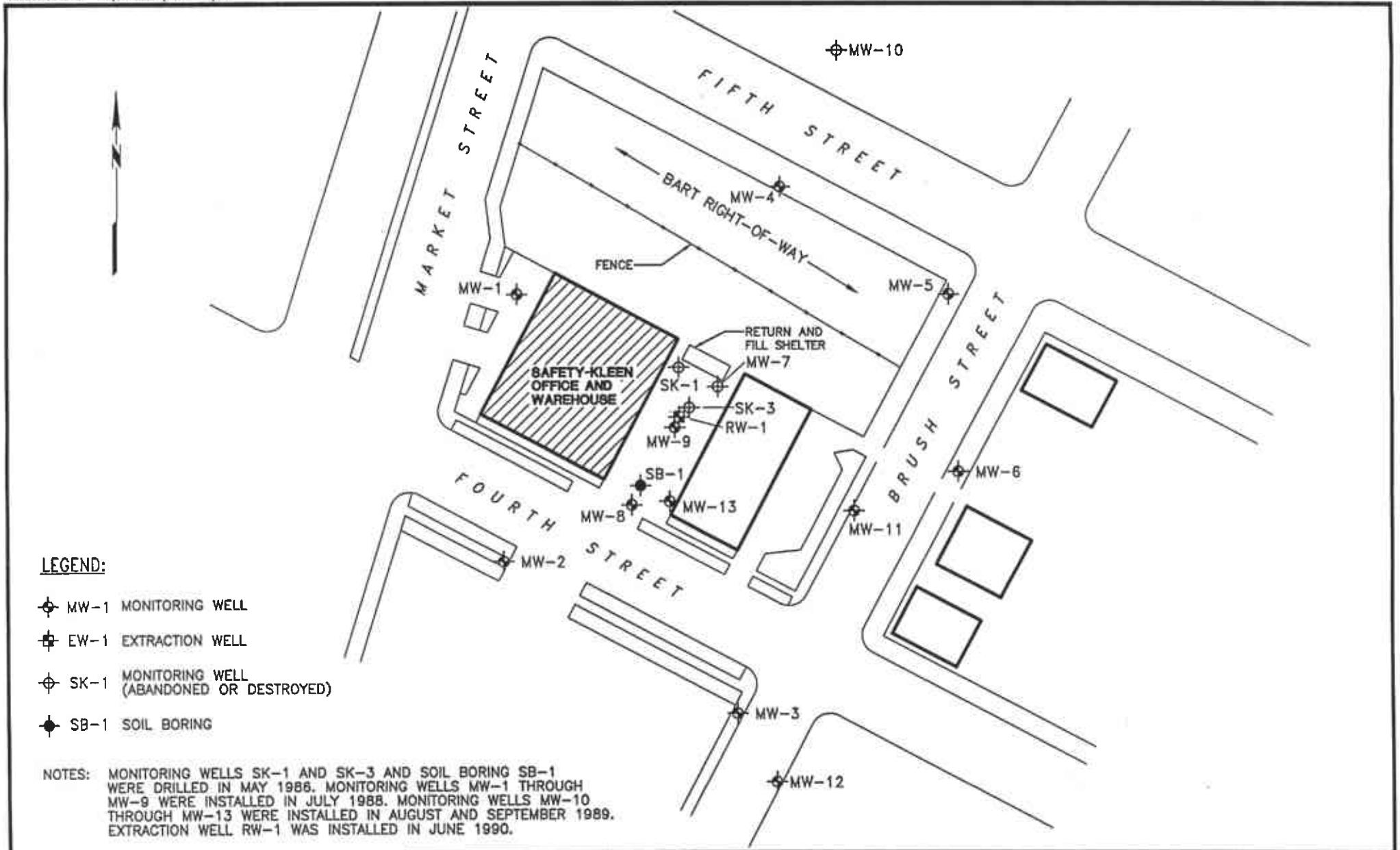
SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

DRAFTED BY: TS	**CHECKED BY:** GDH	**PROJECT NO. 70005-009**	**FIGURE 1**	***SECOR*** 1390 Willow Pass Road Suite 360 Concord, CA 94520
DWG. DATE: 04-05-94	**REV. DATE:** 06-15-95	**Safety-Kleen Corp. 400 Market Street Oakland, California**	**Site Location Map**	
FILE NAME: Oakland7.F01				

199509.061018 X:\S-KLEEN\OAKLAND\SITE



NOTES: MONITORING WELLS SK-1 AND SK-3 AND SOIL BORING SB-1 WERE DRILLED IN MAY 1986. MONITORING WELLS MW-1 THROUGH MW-9 WERE INSTALLED IN JULY 1988. MONITORING WELLS MW-10 THROUGH MW-13 WERE INSTALLED IN AUGUST AND SEPTEMBER 1989. EXTRACTION WELL RW-1 WAS INSTALLED IN JUNE 1990.

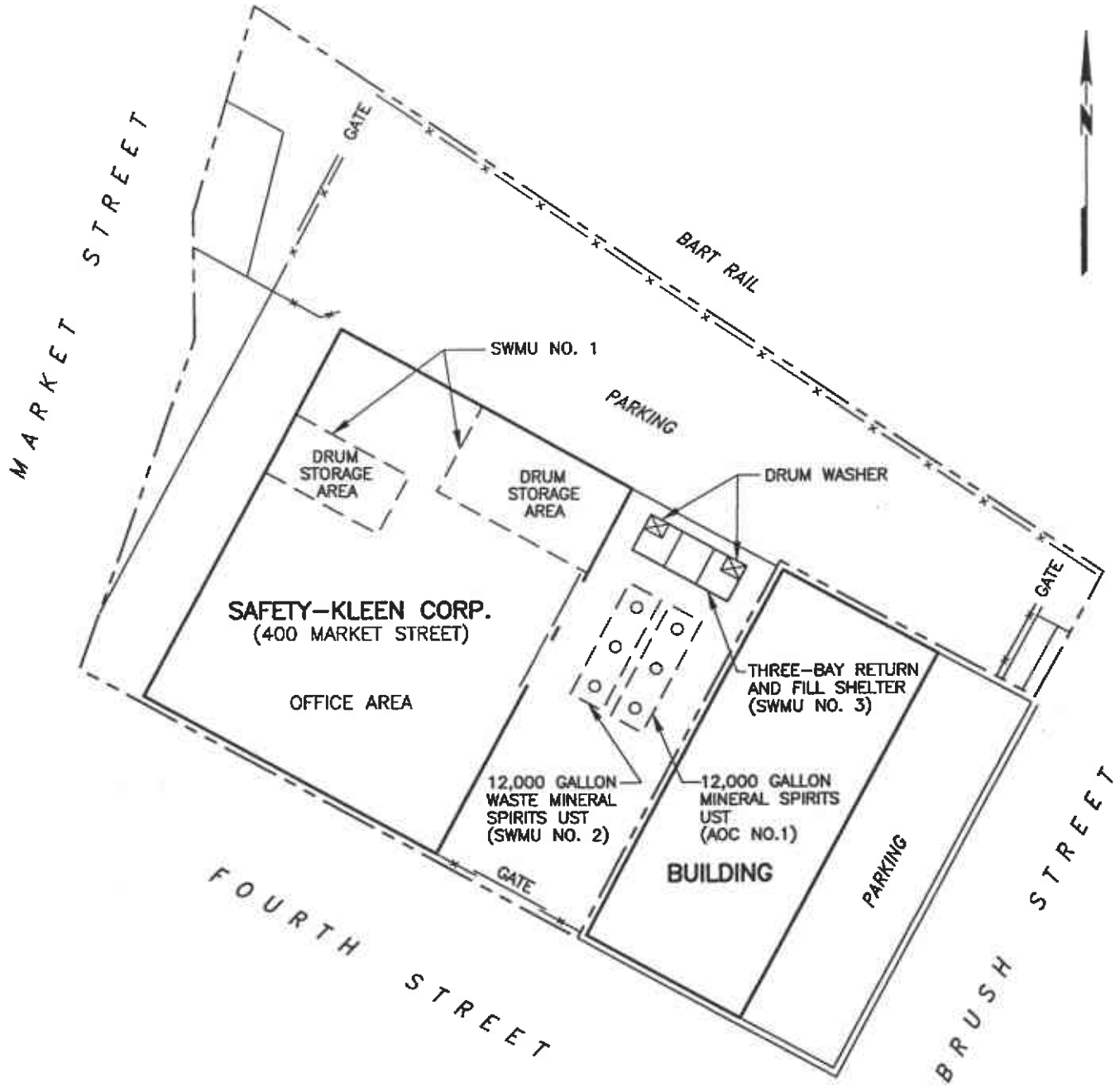
0 80 160
SCALE FEET

SECOR
INTERNATIONAL INCORPORATED

DRAWN	CCR
APPR	GH
DATE	05SEP95
JOB NO.	70005-009

FIGURE 2
SAFETY-KLEEN
400 MARKET STREET
OAKLAND, CALIFORNIA

SITE PLAN



LEGEND:

——— FACILITY BOUNDARY LINE

—x— —x— FENCE

(SWMU) SOLID WASTE MANAGEMENT UNIT

(AOC) AREA OF CONCERN

0 40 80

SCALE FEET

SECOR INTERNATIONAL INCORPORATED	DRAWN CCR
	APPR GH
	DATE 05SEP95
	JOB NO. 70005-009

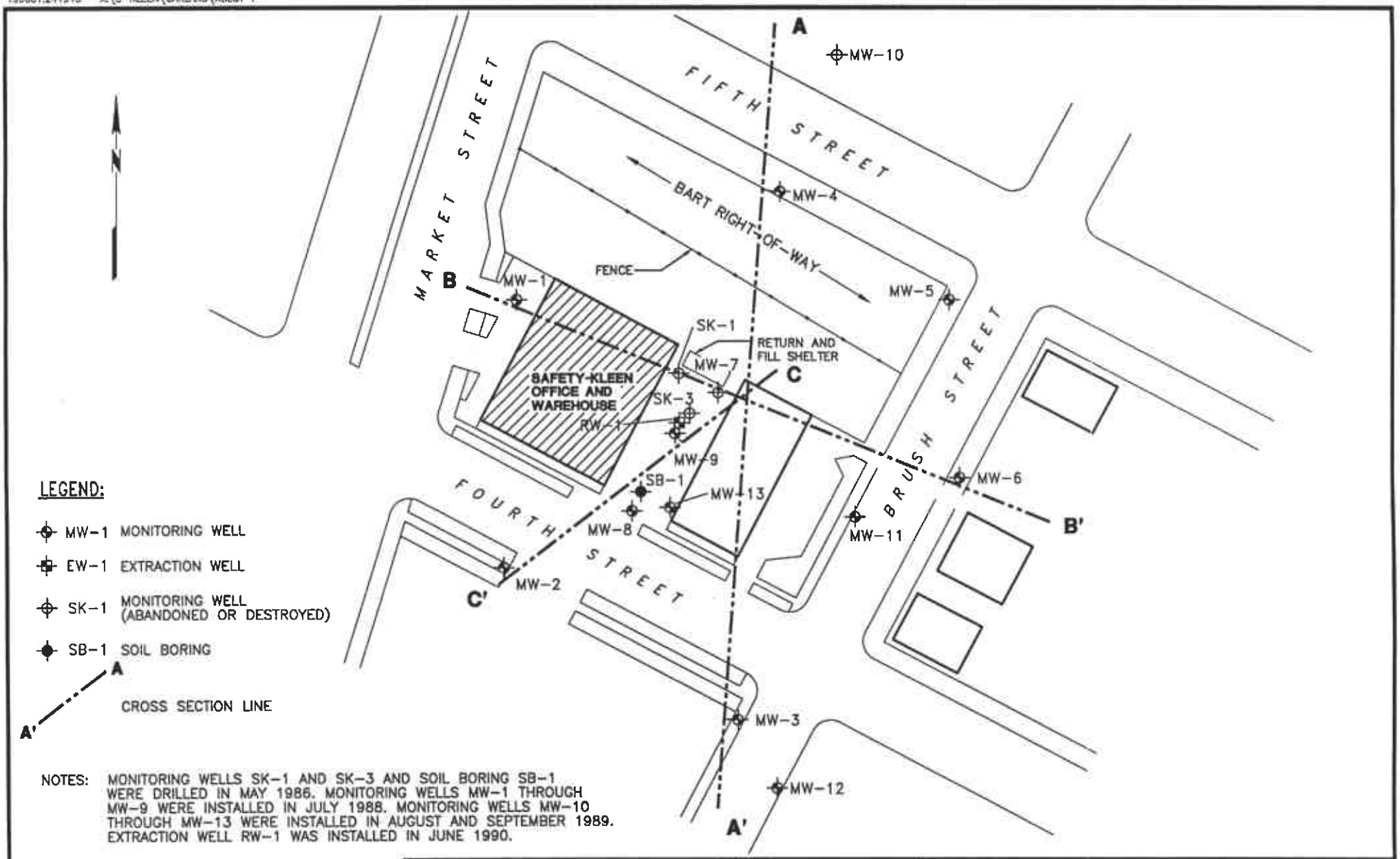
FIGURE 3

SAFETY-KLEEN
400 MARKET STREET
OAKLAND, CALIFORNIA

FACILITY MAP

199509.051507 X:\19-KLEEN\OAKLAND\FACILITY

199601,241946 X:\S-KLEEN\OAKLAND\XSECT-P



NOTES: MONITORING WELLS SK-1 AND SK-3 AND SOIL BORING SB-1 WERE DRILLED IN MAY 1986. MONITORING WELLS MW-1 THROUGH MW-9 WERE INSTALLED IN JULY 1988. MONITORING WELLS MW-10 THROUGH MW-13 WERE INSTALLED IN AUGUST AND SEPTEMBER 1989. EXTRACTION WELL RW-1 WAS INSTALLED IN JUNE 1990.

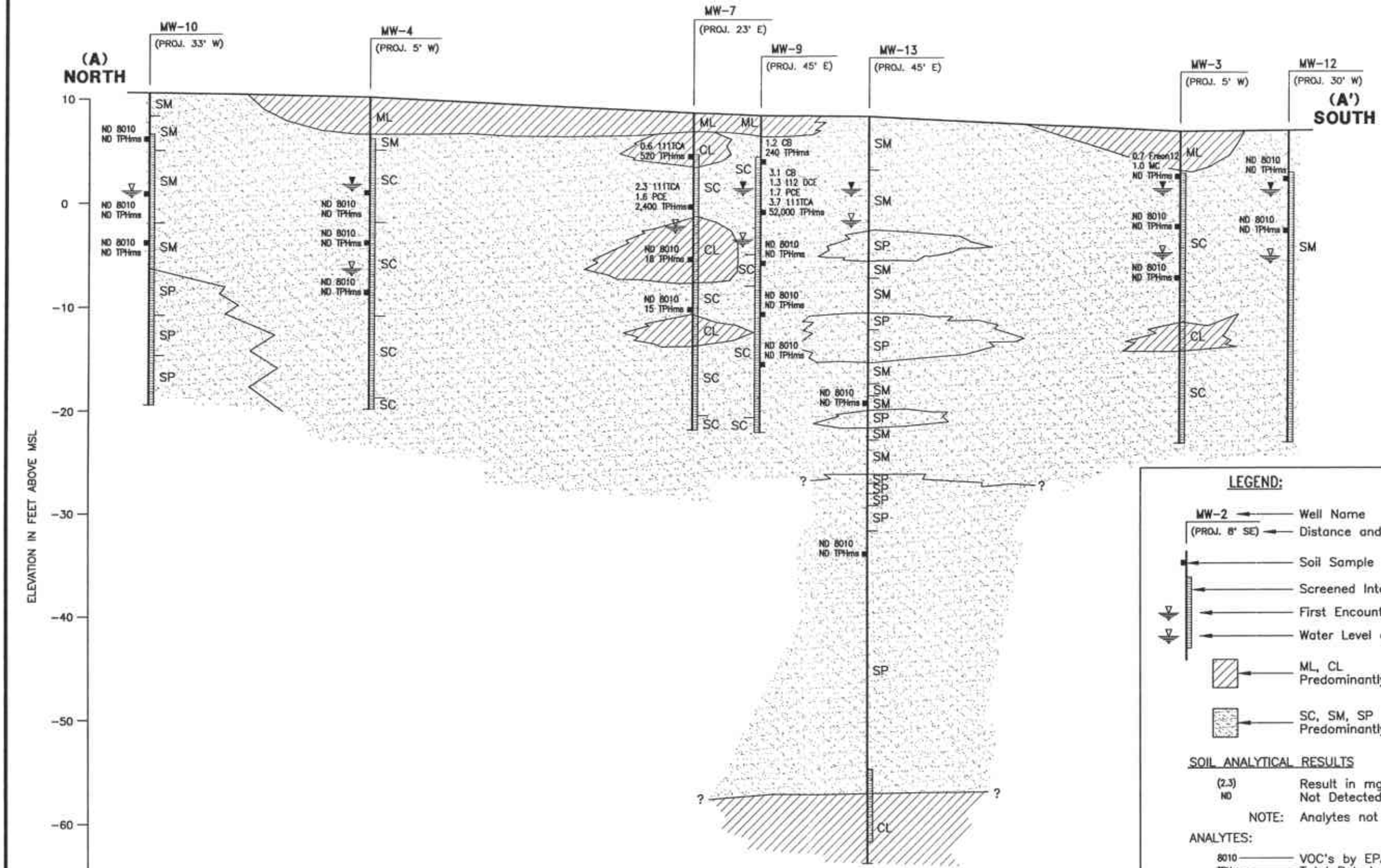
0 80 160
SCALE FEET

SECOR
INTERNATIONAL INCORPORATED

DRAWN	CCR
APPR	GH
DATE	24JAN96
JOB NO.	70005-009

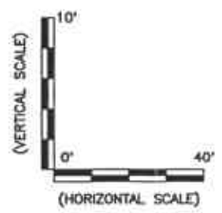
FIGURE 4
SAFETY-KLEEN
400 MARKET STREET
OAKLAND, CALIFORNIA

CROSS SECTION LOCATION MAP



CROSS SECTION A-A'

NOTE: Early boring logs for the Site show predominantly SC (clayey sand) in the shallow subsurface. Boring logs for wells installed after MW-9 report SM (silty sand) in the shallow subsurface. For the purpose of this cross section, the two have been grouped together, as it is likely they represent the same lithologic unit.



LEGEND:

- MW-2 — Well Name
- (PROJ. 8° SE) — Distance and Direction of Projection
- Soil Sample
- Screened Interval
- First Encountered Water level During Drilling
- Water Level on October 1995
- ML, CL — Predominantly Fine-Grained Soils
- SC, SM, SP — Predominantly Coarse-Grained Soils

SOIL ANALYTICAL RESULTS

- (2.3) — Result in mg/kg
- ND — Not Detected

NOTE: Analytes not shown were not detected.

ANALYTES:

- 8010 — VOC's by EPA Method 8010
- TPHms — Total Petroleum Hydrocarbons as Mineral Spirits
- 111TCA — 1,1,1-Trichloroethane
- PCE — Tetrachloroethene
- CB — Chlorobenzene
- FREON 12 — Dichlorodifluoromethane
- t12DCE — trans-1,2-Dichloroethene
- MC — Methylene Chloride

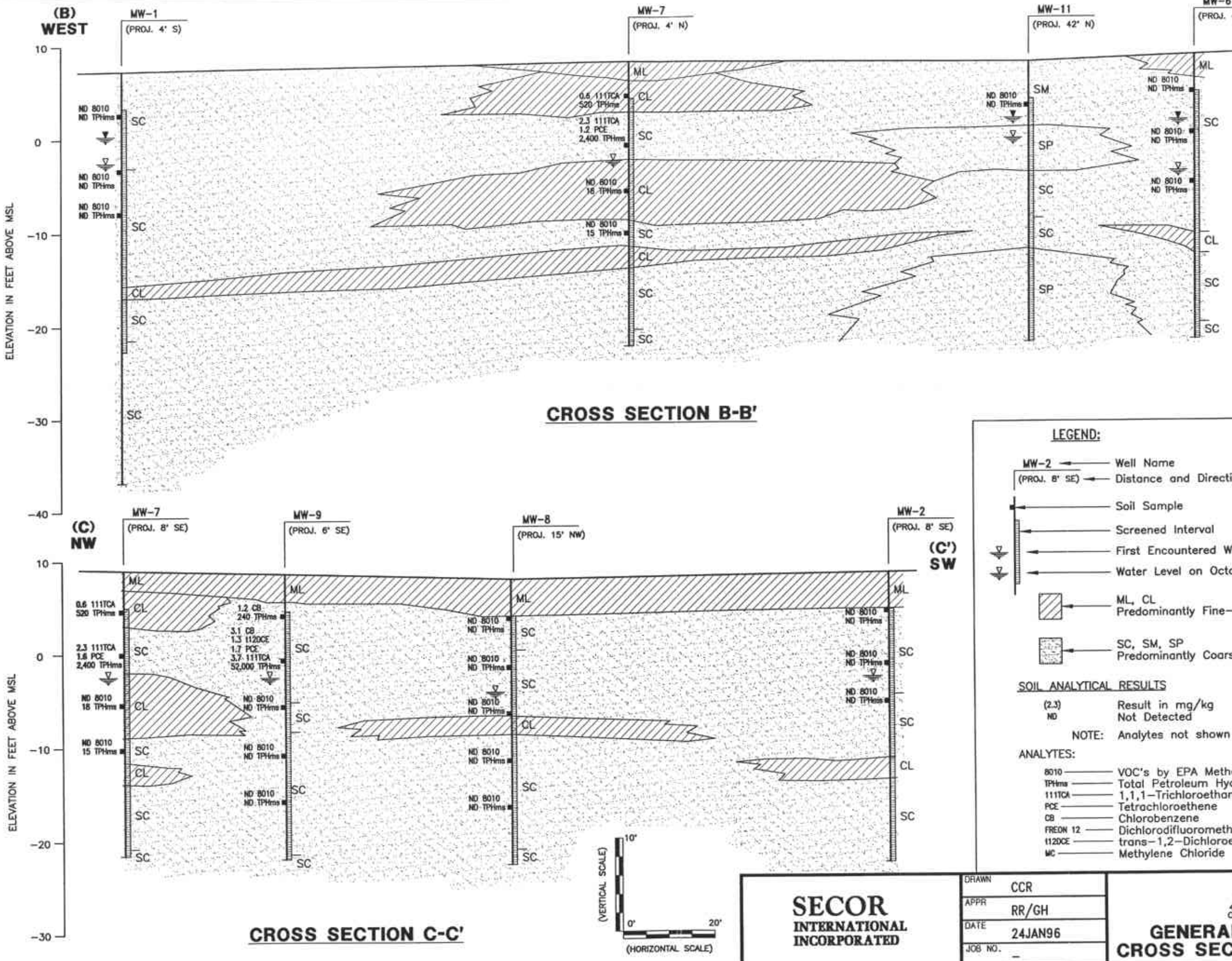
SECOR INTERNATIONAL INCORPORATED

DRAWN	CCR
APPR	RR/GH
DATE	24JAN96
JOB NO.	—

FIGURE 5
SAFETY-KLEEN
400 MARKET STREET
OAKLAND, CALIFORNIA

GENERALIZED GEOLOGIC CROSS SECTION A-A'

199601.241602 X:\18-KLEEN\OAKLAND\SECTION



CROSS SECTION B-B'

CROSS SECTION C-C'

LEGEND:

- MW-2 (PROJ. 8° SE) — Well Name; Distance and Direction of Projection
- Soil Sample
- Screened Interval
- First Encountered Water level During Drilling
- Water Level on October 1995
- ML, CL — Predominantly Fine-Grained Soils
- SC, SM, SP — Predominantly Coarse-Grained Soils

SOIL ANALYTICAL RESULTS

- (2.3) — Result in mg/kg
- ND — Not Detected

NOTE: Analytes not shown were not detected.

ANALYTES:

- 8010 — VOC's by EPA Method 8010
- TPHms — Total Petroleum Hydrocarbons as Mineral Spirits
- 111TCA — 1,1,1-Trichloroethane
- PCE — Tetrachloroethene
- CB — Chlorobenzene
- FREON 12 — Dichlorodifluoromethane
- 112DCE — trans-1,2-Dichloroethene
- MC — Methylene Chloride

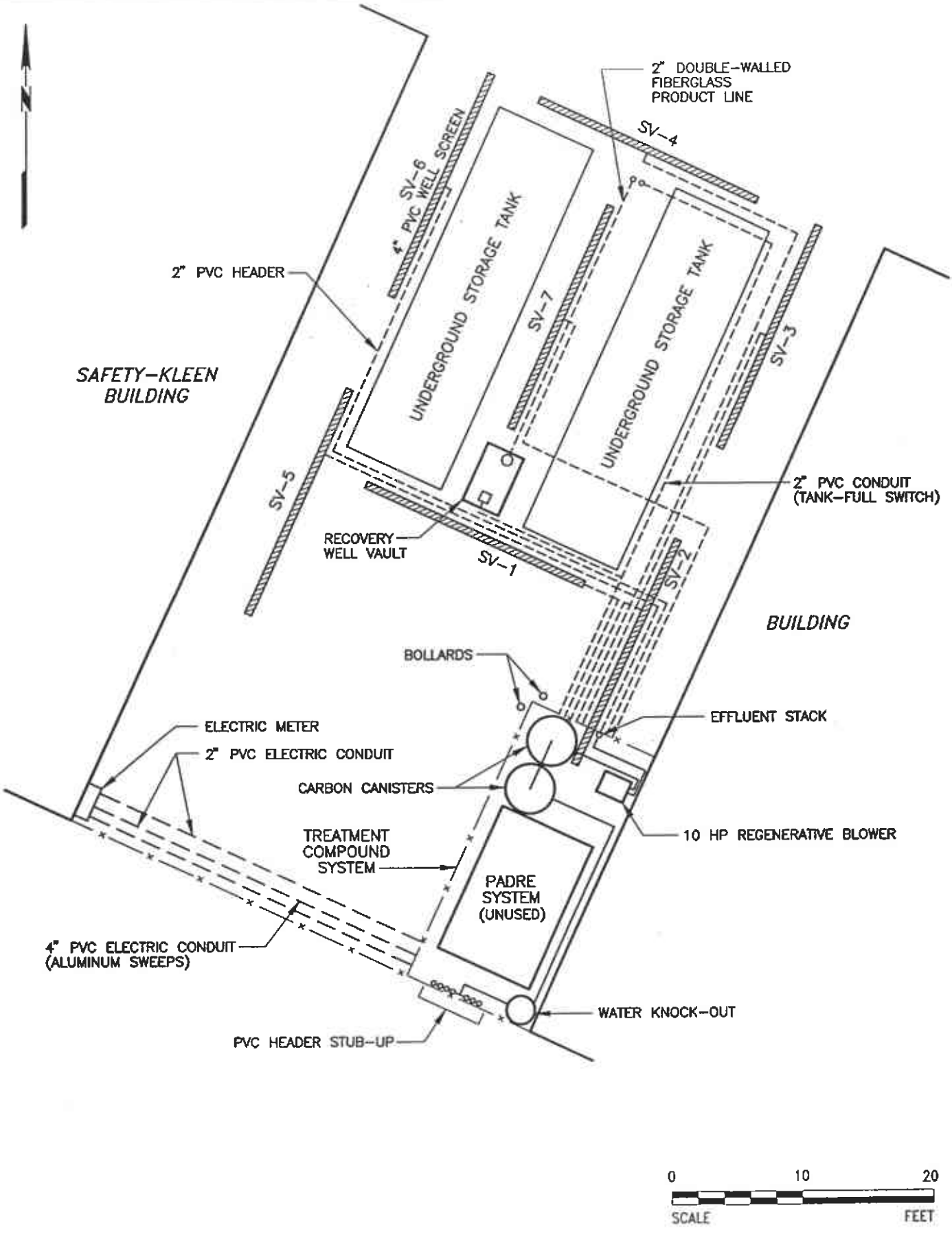
SECOR INTERNATIONAL INCORPORATED

DRAWN	CCR
APPR	RR/GH
DATE	24JAN96
JOB NO.	_

FIGURE 6
SAFETY-KLEEN
400 MARKET STREET
OAKLAND, CALIFORNIA

GENERALIZED GEOLOGIC CROSS SECTION B-B' AND C-C'

199601.241802 X:\S-KLEEN\OAKLAND\SECTION



SECOR
INTERNATIONAL INCORPORATED

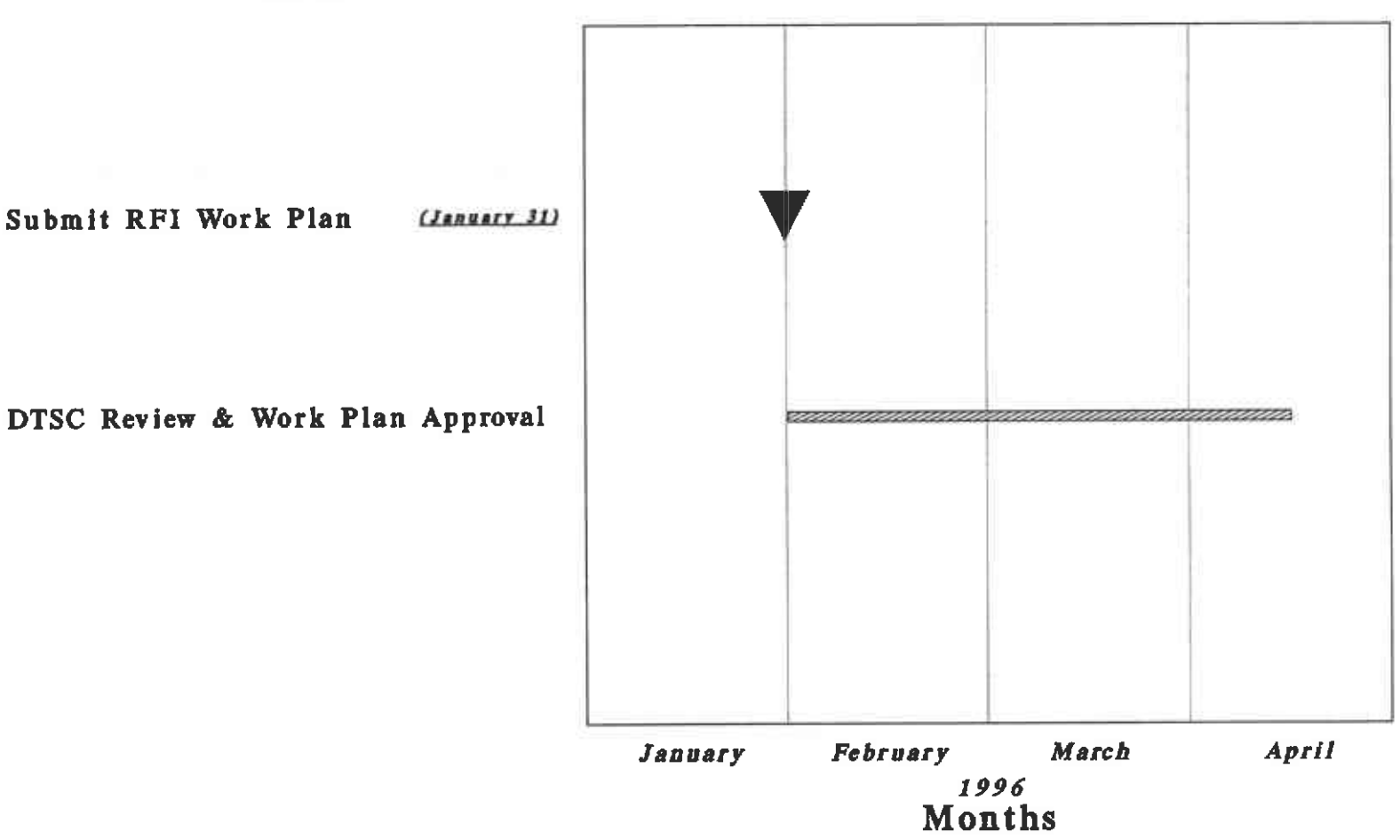
DRAWN	CCR
APPR	GH
DATE	08DEC95
JOB NO.	70005-009

FIGURE 7
SAFETY-KLEEN SERVICE CENTER
400 MARKET STREET
OAKLAND, CALIFORNIA

SOIL VAPOR EXTRACTION SYSTEM LAYOUT

199512.071928 X:\SK-KLEEN\OAKLAND\SITE2

Figure 8
RFI Timeline



APPENDIX A

Standardized

SAFETY-KLEEN CORP.

DATA OBJECTIVES/QUALITY ASSURANCE PROJECT PLAN

CONTENTS

Page

CONTENTS (continued)

Page

CONTENTS (continued)

TABLES

FIGURES

APPENDIX A

DATA OBJECTIVES / QUALITY ASSURANCE PROJECT PLAN FOR RCRA FACILITY INVESTIGATIONS CALIFORNIA SAFETY-KLEEN FACILITIES

1.0 INTRODUCTION

This Data Objectives/Quality Assurance Project Plan (DO/QAPP) describes the overall data quality objectives (DQOs), describes procedures and rationale for field sampling and analytical testing, and describes the quality assurance/quality control (QA/QC) procedures which will be implemented to provide data of known quality which meet the DQOs.

1.1 SCOPE OF WORK

The RCRA Facility Investigation (RFI) is designed to be implemented in a phased approach so that appropriate levels of data quantity and quality are obtained. The data collected during the field investigation will be used to define the potential source areas and extent of impacts on the site and to evaluate potential Corrective Measures (CM). A detailed discussion of the purpose and scope of the RFI is contained in the site-specific RFI Work Plan. Detailed procedures for conducting the RFI are provided below.

1.2 DATA QUALITY OBJECTIVES

The overall quality assurance (QA) objective is to develop and implement procedures for field measurements, sampling, and analytical testing that will provide data of known quality that are consistent with the intended use of the information. This section defines the objectives by (1) describing the use of the data, (2) specifying the applicable quality control (QC) effort (field checks and analytical support levels), and (3) defining the QC objectives (data quality acceptance criteria).

1.2.1 Data Usage and Level of QA/QC

The field measurements and laboratory analyses will be used to support one or more steps in the RFI process. The data to be collected range from qualitative information (based on field observations) to quantitative laboratory analyses.

The sampling team will use several types of QA/QC samples to ensure and document the integrity of the sampling procedures, and the laboratory sample-handling procedures, as well as the validity of the measurement data.

Field replicate samples will be collected to evaluate the reproducibility of the sampling technique. Replicate samples will be collected for each matrix at a rate of 5 percent or one for every 20 samples. If less than 20 samples are collected during a particular sampling event, one field replicate will be collected. Since the replicate will be "blind" to the laboratory, it will have a coded identity on its label and on the chain-of-custody record form. The actual sampling location will be recorded on the daily log form and the sampling log form.

Analyte-free water will be obtained from the laboratory to be used for trip blanks, field blanks, and the final decontamination rinse, if required. If necessary, this water can be verified as being analyte-free by reviewing the analytical results of method blanks run by the laboratory on the days the trip and field blanks were prepared and shipped. Protocols for handling trip blanks, collecting field blanks and equipment blanks, and decontaminating equipment are provided in the following sections.

Trip blanks are not required for non-aqueous samples. Field blanks will be prepared to determine if cross-contamination has occurred during sampling. Two sets of identical bottles, one set containing analyte-free water and one empty set, will be provided by the laboratory. The analyte-free water from the set of bottles is poured over the field sampling device(s) and collected

into the empty set of bottles. Field blanks will be preserved in the same manner as the samples. Field blanks for non-aqueous samples will be prepared at a rate of 10 percent or one for every ten matrix samples, not to exceed one per day. The non-aqueous field blank will be analyzed for volatile organics only.

Field blanks will be shipped with the sample containers and will be held on-site for no longer than two calendar days. Blanks and samples will be maintained at 4°C while stored on-site and during shipment and delivered to the laboratory on the next business day. Sample bottles and blanks will be handled in the same manner prior to their return to the laboratory.

The level of QC effort provided by the laboratory for testing of SW-846 volatiles, semi-volatiles and metals (RCRA or CAM metals) or any other compounds in the samples will conform to standard United States Environmental Protection Agency (USEPA) or Department of Toxic Substance Control (DTSC) protocols. The data quality elements that will be checked and documented include the following parameters.

1.2.2 Precision, Accuracy, and Completeness

1.2.2.1 Precision

Measurements of data precision are necessary to demonstrate the reproducibility of the analytical data. Precision of the sample data will be determined from the analyses of matrix spike/matrix spike duplicates (MS/MSDs). Field replicates will be collected at a frequency of one per 20 samples or at least one per sample matrix if less than 20 samples are to be collected (one MS and one MSD per 20 samples per matrix will be analyzed). An extra sample volume will be collected for each replicate.

1.2.2.2 Accuracy

Accuracy is the relationship of the reported data to the "true" value. The accuracy of the methods used for the analyses of the samples will be evaluated through the analysis of calibration standards, MS/MSDs, and surrogate spikes. As indicated above, MS/MSD samples will be analyzed at a frequency of one per 20 samples. The compounds used and their accuracy limits are set by the SW-846 Methodology and the Title 26 List for Metals.

1.2.2.3 Completeness

Completeness is a measure of the amount of data obtained from a specific measurement that is judged to be valid as compared to the total amount of data collected. The validity of the collected data will be evaluated utilizing the guidelines discussed in Section 3.5 (Data Reduction, Validation, Reporting). The laboratory should provide data that meet QC acceptance criteria for 90 percent or more of the requested determinations. If the percent completion limits are not met, the laboratory may be required to re-analyze samples or re-sampling may be required.

1.2.3 Representativeness

The sampling procedures employed during the RFI are designed to provide data that are representativeness of actual conditions at the sampling location. Considerations for evaluating the representativeness of the data include, but are not limited to, the following:

- The sampling location,
- The methods used to obtain samples at the site, and
- Appropriateness of the analytical method to the type of sample obtained.

The rationale of the sampling network is described in detail in the RFI Work Plan. Field sampling activities will be performed in accordance with the procedures described in the Section 2.0.

1.2.4 Comparativeness

Comparativeness expresses the confidence with which one data set can be compared with another data set. The extent to which existing and planned analytical data will be comparable depends on the similarity of sampling and analytical methods. The procedures used to obtain the analytical data, as documented in Section 3.0, are expected to provide comparable data. Analytical data will be reported in the units which are reported by the laboratory. Results of standard and non-standard analyses will not be compared.

1.2.5 Quality Assurance Reports

Data collection activities will be documented through the use of field log forms and log books. These field records will be reviewed and included in the project file. The QA reports prepared by the analytical laboratory will include the appropriate analytical data, the results of the QC check samples, and a description of problems encountered and corrective actions taken. The QA reports will be reviewed to determine the quality and limitations of the data.

2.0 FIELD PROGRAM

2.1 SOIL BORING PROGRAM

This section outlines procedures and equipment used in the soil boring, soil sampling and/or vadose-zone well installation. Necessary state and local permits and utilities markouts will be obtained and completed prior to initiating these activities. Borings will be drilled and the vadose-zone wells will be installed by a California - licensed well driller. A California Registered geologist will oversee the drilling and soil sampling program.

2.1.1 Drilling Equipment Cleaning Procedures

Prior to arriving at the site, the drill rig, tools and accessories will be thoroughly decontaminated with a pressure steam cleaner. Downhole drilling tools and sampling equipment, such as bits, augers, rods, and split spoons will be steam cleaned between boreholes at the designated decontamination area. A decontamination pad will be constructed on-site for equipment decontamination. The decontamination area will be constructed in such a way that washing fluids can be collected on-site for future disposal by Safety-Kleen.

Site cleanup will be performed after work at each boring well has been completed and prior to movement of any equipment to the next boring location. Contaminated clothing, gloves, boot covers, and used rags will be disposed of in on-site receptacles.

Split-barrel core samplers (split-spoons) will be decontaminated at drilling locations in clean 5-gallon plastic buckets and will be cleaned according to the following procedure:

- removal of loose material with brush;
- laboratory-grade detergent wash;
- tap water rinse;
- distilled/deionized water rinse;
- detergent solution and tap water wash;
- tap water rinse;
- distilled/deionized water rinse;
- 10 percent nitric acid rinse, if sample is for metals analysis;
- distilled/deionized water rinse;
- acetone (pesticide-grade), if sample is for organics analysis;
- total air dry or nitrogen blow out; and
- distilled/deionized water rinse.

If, during drilling activities, parts of the drilling rig or specific equipment need cleaning, the rig will be taken to the decontamination area and steam cleaned.

2.1.2 Drilling Procedures

If possible, the borings will be drilled in order of contamination, with the least contaminated locations drilled first. Drilling will be in order of least to most suspected contamination as determined by the historical data, if available for the site.

A geologist will be present at the operating drill rig and will be responsible for the collection and logging of samples, monitoring of drilling and decontamination procedures, and preparing boring logs. In addition, the geologist will maintain a daily log recording the events of the day. An example soil boring log is included as Figure A-1.

2.1.3 Drilling

If soils encountered at the site are of a granular nature, it is assumed that the air-rotary drilling technique will be used for this site. However, prior to using the air-rotary rig, an attempt will be made to perform the investigation using the hollow-stem auger drilling technique. The DTSC will be notified two weeks prior to work implementation. Should the use of an air rotary drilling technique become necessary, the DTSC will be consulted.

The hollow-stem auger drilling technique involves the use of truck-mounted equipment capable of rotating a drill bit into the subsurface on a string of hollow-stem auger flights. Drill cuttings are continuously lifted to the surface on the outside of the flights while rods and a plug are used inside the hollow-stem flights to keep the material out. The plug is removed for split-spoon sampling inside the flights.

The air-rotary drilling technique involves the use of truck-mounted equipment capable of rotating a drill bit into the subsurface while installing a solid, temporary casing behind the auger bit. Drill cuttings are continuously air-lifted to the surface. The drill bit is removed for split-spoon sampling inside the casing. The temporary casing will be removed during grouting of the boring or during vapor extraction or groundwater well installation.

Soil cuttings generated during drilling will be containerized at the site. After all Phase I borings are completed, the soil will be managed in observance of all state and federal regulations.

2.1.4 Split-Barrel Core Sampling

Split-barrel core samples of unconsolidated sediments and weathered bedrock (if encountered) will be collected through the casing prior to advancing the drill bit. The frequency of split-barrel core sampling will be at 5-foot increments. A split-barrel core sampler, which is 24 inches long and either 2 or 3 inches in diameter, will be used for sampling. The sampler will be advanced into the formation either by applying hydraulic pressure or by dropping a conventional 140-pound hammer from a height of 30 inches onto the sampling assembly. In addition to the drilling equipment, the following equipment may be used during the soil sampling program:

- Split-barrel core sampler(s),
- Micro or other laboratory cleaner,
- Brushes,
- Plastic buckets,
- Distilled water,
- Plastic sheeting,
- Stainless-steel spatula,
- Stainless-steel pan,
- Table (optional),
- Flame ionization detector (FID) or photoionization detector (PID) instrument,
- Health and safety equipment (see the Health and Safety Plan),
- Sample containers,
- Nitric acid and/or acetone,
- Gloves,
- Brown paper bags and/or
- Resealable plastic bags.

A field geologist will keep a detailed log for each borehole including the date sampling occurred and the location, depth, standard penetration test (blow counts), grain size, relative proportion, angularity, moisture, color, and FID or PID screening results of the material recovered and record any visual staining observed that may indicate contamination. The geologist will ascertain that the sampling device is cleaned between sampling intervals. As drilling continues, the geologist will monitor the drilling progress, describe the geologic material taken from the borehole, and collect and describe soil samples. A conventional split-spoon sampler will be used in accordance with the following procedures:

- Clean split-barrel samplers will be handled while wearing clean, disposable gloves throughout the sampling activities.
- The sample will then be collected by the driller using either hydraulic pressure or the standard penetration method.
- Once retrieved, the split-spoon sampling device will be placed on clean polyethylene sheeting.
- Upon opening the split-spoon sampler, the sample recovery and description will be recorded on the sample/core log by the on-site geologist.
- The ends of the two bottom sample rings will be sealed with Teflon™ tape and capped with polyethylene end caps for submittal to the laboratory.
- The remaining soil, not used for laboratory analysis, will be placed in a resealable plastic bag or sealed jar and the head space will be checked for total VOCs (TVOCs), as discussed in Section 2.1.5 (Field Screening for Total Volatile Organic Compounds).
- The samples will be handled, capped and sealed as efficiently and expeditiously as possible in order to minimize the loss of volatile constituents. The samples will be packed into the laboratory containers so that little or no head space is present.
- The presence of free product will be determined by visual inspection, odor, and field-screening results.

- The sample label will be completed in accordance with Section 2.5.1 (Field Sampling Documentation), attached to the sample container, and covered with transparent tape.

- The sample/core log will be completed (see Attachment A-1).

- Each sample scheduled for laboratory analysis will be sealed in a resealable bag and will be preserved by cooling on ice, packaged in double resealable bags, to 4 degrees Celsius and shipped to the laboratory via overnight courier.

- Unused portions of the samples will be placed in drums after sampling activities have been completed.

2.1.5 Field Screening for Total Volatile Organic Compounds in Soil

The head space in each plastic bag or aluminum foil-sealed jar will be checked for TVOCs by a FID and/or PID instrument (organic vapor analyzer [OVA] or HNU ™) to select samples for laboratory analysis. The sample will be allowed to equilibrate to room temperature, then the plastic bag or aluminum foil will be pierced, and a reading will be taken. Readings will be recorded on the sample/core log. Air monitoring instrumentation will be calibrated daily according to the manufacturer's instructions. The sample from each boring which exhibits the highest reading will be sent to the laboratory for VOC analysis. Other samples will be collected as described in the site specific RFI Workplan.

2.1.6 Boring Abandonment

After the completion of the soil borings, the borings which are not converted to vadose-zone wells or groundwater monitoring wells will be abandoned by grouting the boring with a cement-bentonite grout. The grout will be placed in the borings using a tremie pipe placed near the bottom of the boring. After the borehole has been grouted to the surface, to insure that the boring has been

properly filled, verification shall be made that the volume of material placed in the boring at least equals the volume of the empty hole. After the grout has been allowed to settle, the top of the abandoned boring will be resurfaced to match the existing surface and sealed.

2.2 VADOSE-ZONE AND GROUNDWATER MONITORING WELL DRILLING AND INSTALLATION PROCEDURES

This section outlines procedures and equipment used in vadose-zone and groundwater monitoring well drilling and installation. The plan includes protocols for drilling procedures, equipment decontamination, and well construction. Necessary state and local permits and utilities markouts will be obtained and completed prior to beginning drilling at the site. Wells will be drilled and installed by California-licensed drillers. Wells will be drilled using either hollow-stem auger or air-rotary drilling methods depending on the geology at the site.

2.2.1 Drilling Equipment Cleaning Procedures

The drilling equipment used for installation of vadose-zone and groundwater monitoring wells will be cleaned using the same procedure as described in Section 2.1.1 of this Appendix. Split-spoon samples may be collected during well installation depending on the requirements and objectives stated in the RFI Work Plan.

2.2.2 Vadose-Zone and Groundwater Monitoring Well Installation

Vadose-zone monitoring wells will be constructed with the screened interval through any unsaturated impacted soil. Groundwater monitoring wells will be constructed with the screened

interval extending from approximately 10 feet above the saturated zone to a maximum of 15 feet into the saturated zone. Typical schematics of vadose-zone and groundwater monitoring well design are provided as Figure A-2 and A-3, respectively. The wells will be designed with provisions for sand pack and a cement/bentonite casing seal above the screened interval to prevent infiltration of surface water.

- Four-inch diameter, flush-jointed, internally threaded, Polyvinyl Chloride (PVC) screen will be installed in the completed borehole. Grease, oil, and glue will not be used when joining the screen sections together. The screen slot size will be 0.020 inch (20-slot) or an alternative slot size as determined by an on-site geologist. The depth of the screen interval will be determined by the on-site geologist.

- A clean sand pack (compatible with the screen size) will be implaced from approximately 0.5 foot below the bottom of the screen and extending above the screen for a maximum vertical distance of 3 feet as measured after placement, or to an alternative thickness as determined by the field geologist.

- A casing seal consisting of a cement/bentonite mixture will be implaced, via a tremie pipe, in the borehole from the top of the pellet seal extending to land surface.

- Wells will be completed with either a watertight curb box or a protective steel casing and locking cap. A curb box will be employed in high traffic areas and grouted, flush-mounted, with the ground surface.

- Wells will be affixed with a permanent identification marker.

2.2.3 Groundwater Monitoring Well Development

Monitoring wells will be developed no sooner than 24 hours after the well has been completed. Groundwater levels and the total depth of the wells will be measured prior to and after completion of development. Groundwater will be removed from the shallow monitoring wells using a stainless steel bailer or a submersible or centrifugal pump, depending on the depth to water. Each well will be developed by removing a minimum of 3 well casing volumes of water or, in the

event of a well screened in a lower permeability zone, by bailing the well dry twice. Purge water removed from the wells will be containerized and handled by Safety-Kleen. Development water will be contained on-site in drums.

Field measurements of pH, temperature, and specific conductance will be obtained at regular intervals throughout development and will be recorded on a field data sheet. An attempt will be made to develop the wells until groundwater becomes devoid of sediment and pH and specific conductance measurements stabilize.

2.2.4 Well Survey

Newly installed wells will be surveyed for location and elevation. A permanent mark on the inner casing will be used as the reference point for water-level measurements. Surveyor reference marks will be located on both the well casing and outer protective casing. Elevations will be surveyed to an accuracy of +/-0.01 foot. Locations will be determined to an accuracy of +/-1.0 foot. The locations and elevations of each well and ground surface at each soil boring location will be surveyed relative to the USGS or similar datum. The reference points will be measured by a California-licensed surveyor. Survey information will be documented on the well certification forms.

2.3 VACUUM EXTRACTION TEST

As necessary, a soil vapor extraction (SVE) test may be performed at the site to assess the concentration and extent of organic soil vapors and to determine if in-situ SVE is an appropriate potential form of soil remediation at the site.

2.3.1 Methodology

2.3.1.1 SVE Test

SVE tests will be performed using a minimum of 250 standard cubic feet per minute (scfm) blower and granular activated carbon adsorption system to extract and treat the vapors from the test well. Vacuum influences will be measured continually throughout the test with magnehellic gauges from the newly installed vadose-zone wells. Influent and effluent vapor concentrations will be continually monitored throughout the test with a FID organic vapor analyzer.

2.3.1.2 Air Sampling

Vapor samples will be collected from the influent stream with suma canisters. Samples will be kept chilled until they are submitted to the laboratory.

2.4 SAMPLING PROCEDURES

2.4.1 Soil

This section discusses the locations, methodology, and handling of soil samples for sampling to be performed at the Safety-Kleen Facility.

2.4.1.1 Sampling Media/Locations

The media to be sampled at the facility may include soil, groundwater and air. Soil samples obtained and analyzed during any prior tank removal operations may have indicated the presence of contamination from a release concerning the former underground tanks. The objective of this sampling is to determine the source areas and extent of impact in each of the Solid Waste Management Units (SWMU's) identified in the RFA. The RFI Work Plan shows the locations of the SWMUs and the sampling to be performed at each SWMU.

The sampling locations are chosen to effectively surround and delineate the areas previously identified in the RFA. The sampling will be performed on the outer perimeter locations first to minimize the potential for cross-contamination. The total depth of each boring is described in the site specific RFI workplan, or 10 feet past the last sample with detectable concentrations of VOC's. Depths for sampling at each of the locations will be determined by the depth of the unsaturated zone and/or the depth of undetectable concentrations of contaminants. Depth to groundwater water is based on historical data for the area, and is described in the RFI Work Plan.

If contamination extends to the groundwater during the drilling of any soil borings, the boring will be terminated where groundwater was found and the hole will be abandoned according to Section 2.1.6. (Boring Abandonment). A minimum number of borings may be converted to groundwater monitoring wells to assess the presence, flow direction, and possible impact of VOCs on groundwater. The number of groundwater monitoring wells will be determined by site specific conditions as described in the RFI Work Plan. If during the course of the investigation, Safety-Kleen related impacts have not been fully delineated, additional borings and/or well installation will be performed.

2.4.1.2 Sampling Conditions/Methodology

Soil sampling will be conducted in the subsurface using air-rotary or hollow-stem auger drilling techniques. Samples will be collected using a core barrel capable of collecting discrete soil samples.

At each sample location, any vegetative cover, debris, or pavement surface will first be removed from the ground surface. Soil samples will be collected at 5-foot intervals beginning at five feet below ground surface (ft bgs) to a depth determined as mentioned previously. Headspace analysis of collected soil samples by field instrumentation will be conducted as described in Section 2.6.3. Labeling and chain-of-custody procedures will be in accordance with those described in Section 2.5. Quality control samples that will be collected and analyzed during soil sampling include field replicates and blanks.

2.4.1.3 Parameters Measured

Soil samples will be collected for lithologic description and chemical analysis. Samples for lithologic logging will be examined at observed changes in lithology or at least every 5 feet. Soil samples will be collected by pushing the sampler ahead of the drill bit as the borehole is drilled and will be classified according to the Unified Soil Classification System in addition to descriptions of soil structure, alteration, elasticity, etc.

Samples for chemical analysis will be collected in the same manner with a split-barrel drive sampler lined with brass tubes. Chemical parameters and test methods may include the following parameters, as described in the site specific RFI Work Plan:

Sample Type	Parameter	EPA Test Method
Soil	TPH as Mineral Spirits	8015
	Halogenated Volatile Organics	8240
	Aromatic Volatile Organics	8240
	Title 22 Metals	6010

Each discrete soil sample will be analyzed for all parameters named above, except metals, which will be analyzed for in the single sample for the location that exhibits the highest concentration of other analytes.

2.4.1.4 Sampling Types and Frequency

The samples collected during this RFI will all be discrete since specific delineation of subsurface contamination is the objective and sampling will begin at 5 ft bgs. Sampling and contaminant delineation should be accomplished within one sampling mobilization. Soil samples will be taken from perimeter locations first and analyzed, while sampling closer to the center of previously located chemical concentrations continues. The number of sample locations, and the maximum depth of the samples, will be determined by on-site conditions or as outlined in the site-specific RFI Work Plan.

2.4.1.5 Cross Contamination Prevention

To prevent cross contamination between sampling points, the drill rig, tools and accessories will be thoroughly decontaminated with a pressure steam cleaner prior to arriving at the site. Downhole drilling tools and sampling equipment, such as bits, augers, rods, and split spoons will

be steam cleaned between boreholes at the designated decontamination area. A decontamination pad will be constructed on-site for equipment decontamination. The decontamination area will be constructed in such a way that washing fluids can be collected for disposal at the on-site wastewater treatment facility.

Site cleanup will be performed after work at each boring or well has been completed and prior to movement of any equipment to the next boring location. Contaminated clothing, gloves, boot covers, and used rags will be disposed in on-site receptacles.

Split-barrel core samplers (split-spoons) will be decontaminated at drilling locations in clean 5-gallon plastic buckets and will be cleaned according to the following procedure:

- removal of loose material with brush;
- laboratory-grade detergent wash;
- tap water rinse;
- distilled/deionized water rinse;
- detergent solution and tap water wash;
- tap water rinse;
- distilled/deionized water rinse;
- 10 percent nitric acid rinse, if sample is for metals analysis;
- distilled/deionized water rinse;
- acetone (pesticide-grade), if sample is for organics analysis;
- total air dry or nitrogen blow out; and,
- distilled/deionized water rinse.

If, during drilling activities, parts of the drilling rig or specific equipment need cleaning, the rig will be taken to the decontamination area and steam cleaned.

2.4.2 Air

This section discusses the locations, methodology, and handling of air samples for SVE to be performed at the Safety-Kleen Facility.

2.4.2.1 Sampling Media/Locations

The media to be sampled is air purged during the SVE. Soil samples obtained and analyzed during any prior tank removal operations may have indicated the presence of contamination from a release concerning the former underground tanks. The objective of this sampling is to determine the concentration of the contaminants in the vapor phase.

2.4.2.2 Sampling Conditions/Methodology

Air sampling will be conducted in the effluent from the blower used during the SVE. Samples will be collected using suma canisters.

Air samples will be collected after the SVE has been in operation a minimum of 2 hours. Labeling and chain-of-custody procedures will be in accordance with those described in Section 3.8. Quality control samples that will be collected and analyzed during the SVE include field replicates.

2.4.2.3 Parameters Measured

Air samples will be collected for chemical analysis. Air samples will be collected by inserting a tube onto the sampling port provided during the SVE and opening the suma canister. The vacuum in the suma canister will pull the air from the sampling port into the suma canister.

Chemical parameters and test methods may include the following parameters, as described in the site specific RFI Work Plan:

Sample Type	Parameter	EPA Test Method
Air	TPH as Mineral Spirits	8015
	Halogenated Volatile Organics	8240
	Aromatic Volatile Organics	8240
	Fixed Gasses	ASTM D1946

Each discrete air sample will be analyzed for all parameters named above.

2.4.2.4 Sampling Types and Frequency

The air samples collected during this RFI will all be grab since quantification of contaminants in the vapor phase is the objective. Samples are estimated to be taken from 2 locations.

2.4.2.5 Cross Contamination Prevention

To prevent cross contamination between sampling points, new sampling tubing will be used at each sampling point.

2.4.3 Water

This section details the procedures, equipment, and techniques that will be followed for groundwater sampling, if required. Due to the hydrogeologic properties of the formation at any given location, it may be necessary to modify procedures as sampling progresses to ensure that representative groundwater samples are collected.

2.4.3.1 Preparation for Sampling

A site map and a groundwater field form summarizing the information that is needed by the field team will be prepared by the project manager. The fact sheet will include the protocol to be followed, monitoring well construction details, information on the types and nature of hazardous chemicals that may be encountered, handling, storage, and transportation procedures, and references to the appropriate HASP procedures in which the need for special protective gear is indicated (See the Health and Safety Plan).

Upon arriving at a well location, sampling personnel will check the well for damage, remove the cap, and wipe the top of the well casing with a clean cloth or paper towel. Plastic sheeting will be placed around the well to protect sampling equipment from potential contamination.

2.4.3.2 Groundwater Monitoring

Prior to sampling, the depth to water and total depth of the wells to be sampled will be measured. An electronic water-level indicator will be the primary instrument used for instantaneous measurement of the depth to ground water. The electronic tape is marked at 0.01-foot intervals. The probe is lowered down the center of the well casing. When the probe encounters water, an audio and visual alarm is triggered. The measurement can be made from the premarked measuring point at the top of the well.

If product is observed in any well, the thickness will be measured with an interface probe. The probe gives an audible beeping sound when submerged in water, and a solid tone when submerged in oil/products. These data will be recorded on the water sampling field data form (Figure A-4) and will be used to calculate the volume of water in the well and to determine if formation material has accumulated in the well. Wells with a recordable thickness of product will not be sampled.

Each measurement will be made to an accuracy of 0.01 feet below the measuring point. Care will be taken to avoid cross contamination of wells by thoroughly cleansing the measuring instrument between wells using a detergent solution wash and distilled water rinse.

2.4.3.3 Equipment Cleaning Procedures

Submersible pumps, discharge hoses, bailers and cables will be new or cleaned prior to initial use and after pumping each well in the following manner:

- External surfaces will be brushed free of all loose material, washed with detergent solution and potable water, and rinsed with distilled/deionized water.

- Internal surfaces will be cleaned by first placing the pump in a clean drum with detergent solution and allowing the pump to operate until the water looks clear. The pump will then be removed from the drum and rinsed with distilled/deionized water.
- Cleaning solutions will be contained and disposed of properly.
- The pump and cable will be wrapped in new plastic sheeting for transportation and storage.

Pumps will be flushed with deionized water and new tubing used for each well. Bailers will be decontaminated, prior to use in the field, in the following manner:

- Detergent solution and tap water wash.
- Tap water rinse.
- Distilled/deionized water rinse.
- Total air dry

2.4.3.4 Well Evacuation Procedures

Wells will be evacuated prior to sampling; sampling will not be performed unless the total water column (or as much of the column as possible) has been replaced by fresh ground water. Groundwater samples will not be collected from new wells until 48 hours after development to ensure that the wells have stabilized with the surrounding environment.

Depending on the depth to water and the yield of a well, a dedicated pump with dedicated tubing, a decontaminated stainless-steel submersible pump, or a decontaminated or disposable bailer will be employed to purge monitoring wells. If the purge volume does not warrant pumping, a bailer may be used. Regardless of the evacuation method, the evacuation rate will not exceed that of well development. Equipment used to purge the wells will be documented, including the composition of the equipment, on a water sampling field data form.

A volume of water equal to three times the volume of standing water will be removed from the well casing prior to collecting groundwater samples. The volume of standing water in each well will be calculated using the following equation: $V = (pi)(r^2)(h)$ where,

V = well volume (ft^3)

r = well radius (ft)

h = column of water in the well (total depth - depth to water) (ft)

When a submersible pump is used, the pump will be slowly lowered into the well on a polypropylene safety line. The pump will be set no more than 6 feet below the water level and lowered as the water level is depressed, to ensure that static water has been removed from the well prior to sampling. Once the pump has been lowered to the desired setting, the safety line will be secured. New tubing will be dedicated to each well sampled and discarded after sampling.

The pump discharge will be monitored to determine if the water level in the well has dropped below the pump intake. If this occurs, the pump discharge will be reduced to maintain pumping. After the well has been purged, the pump will be raised until the pump intake suction is broken to ensure that the column of water above the pump will be removed from the well.

The temperature, pH, and conductivity of the ground water will be measured periodically (generally every well volume) during purging. Purging will be completed when these parameters have stabilized or three to five well volumes have been removed. Samples will be collected within 2 hours after the well has been evacuated. Low-yielding wells will be evacuated to dryness and allowed to recover prior to sampling. If recovery is extremely slow (i.e., 4 hours or more), the well will be sampled prior to complete recovery when sufficient water can be obtained. Purge water will be containerized and handled by Safety-Kleen in accordance with all applicable requirements.

2.4.3.5 Groundwater Sampling Procedure

Samples will be collected within 2 hours after the evacuation of the well is completed. Samples will be collected using decontaminated, disposable, bottom-loading Teflon or stainless steel bailers and Teflon-coated stainless-steel leads (3 to 6 feet in length).

The wells will be sampled in the ascending order of contamination, with the least contaminated well being sampled first. The order will be determined by groundwater flow gradient, water-quality information collected during the soil boring program, or analytical results of previous sampling events.

Clean polypropylene rope will be attached to the Teflon-coated leads to lower bailers into the wells. Disposable gloves will be worn by the field team when handling the sampling equipment. New rope and disposable gloves will be used at each well. Care will be taken to prevent bailers or rope from coming into contact with any contaminated surface.

The containers will be inspected to see that they are the correct type and number and have the correct preservative, if required. The labels will be properly filled out as described below and affixed to the containers. Samples will be carefully poured into the containers, avoiding agitation or turbulence, which can result in the loss of VOCs and/or excessive oxygenation of the samples. Care will be exercised to avoid breakage and to prevent contact of any foreign substance with the interior surface of the bottles, vials, or caps. Caps will not be removed until sampling actually occurs. The procedures that personnel will follow to collect samples are described below.

- Containers will be labeled; marked with project information, well No., and date; and wrapped with clear tape.

- A decontaminated bailer will be lowered into the water column gradually to minimize turbulence. The bailer will be allowed to sink and become fully submerged. Water from the first bailer will be containerized for VOC analysis. The 40-Ml vials for VOCs will be filled slowly and checked to ensure that there are no air bubbles.

- The well cap will be closed and the well will be locked.

- Samples will be packed on ice in a cooler and the water sampling field data form and chain-of-custody form will be completely filled out. Samples will be shipped at the end of every day of the sampling event. The receiver's signature will be recorded on the chain-of custody form.

2.4.3.6 Parameters Measured

2.4.3.6.1 Field

Groundwater will be measured for temperature, pH, and specific conductance in the field at the time of sampling because these properties may change during storage. The sample will be covered if the thermometer or probes are not inserted immediately. Field measurements will be taken and recorded on the water sampling log.

Before a measurement is made, the probes will be completely rinsed with deionized or distilled water. The probe will be lowered into a container of sample and allowed to equilibrate. Between measurements, the probes will be immersed in deionized water. The pH meter will be re-calibrated periodically during the sampling round to ensure accurate and precise measurements.

Temperature

Temperature will be measured with a rapidly equilibrating, mercury-filled, or electronic Celsius thermometer.

pH

The pH will be determined with a glass hydrogen-ion electrode compared against a reference electrode of known potential by means of a pH meter. Because pH is exponentially related to concentration, great care will be exercised in making a measurement.

Specific Conductance

A battery-powered conductivity meter will be used to take the conductivity measurements. To measure the specific conductance of the samples, the instrument will be adjusted to the sample temperature, and the probe will be lowered into the sample and stirred gently.

2.4.3.6.2 Laboratory

Chemical parameters and test methods may include the following parameters, as described in the site specific RFI Work Plan:

Sample Type	Parameter	EPA Test Method
Water	TPH as Mineral Spirits	8015

Halogenated Volatile Organics	8240
Aromatic Volatile Organics	8240

2.4.3.7 Sample Containers, Preservatives, and Holding Times

The type of container and preservation used for sample collection will be dictated by the analytical parameters. To prevent the possibility of cross-contaminating samples while adding preservatives in the field, pre-preserved bottles prepared by the laboratory will be used. Preservatives will be itemized with the bottle description on the water sampling log and chain-of-custody documentation.

Samples will also be preserved at approximately 4°C in an ice-filled sealed cooler for transport to the laboratory for analysis. Analysis will be performed as soon as possible within the USEPA and standard methods holding times as referenced in SW846. To ensure that maximum holding times are not exceeded, samples will be delivered to the laboratory on the day of collection or, if this is not possible, shipped overnight by courier.

2.5 DOCUMENTATION

2.5.1 Field Sampling Documentation

Field log books, documentation logs, and photographs will be used to document the data collection activities. Information generated from field sampling activities will be documented on the appropriate forms, which include the following:

- sample/core log
- data form - SVE

_ groundwater sampling field data form
_ chain-of-custody record;
_ daily log;
_ location sketch.

Incoming documents will be dated and filed. If distribution is necessary, the documents will be distributed to project personnel. In addition, notes from project meetings and telephone conversations will be filed along with other project documents.

Each sample will be given a unique designation code that will be recorded in the field log book, on the sample/core log, on the label affixed to the sample container, and on the chain-of-custody record. The first set of characters of each code will represent the SWMU or other operational area prefix, the next set of characters will represent the soil boring sample number, and the last set of characters will be the sample depth interval in the boring in feet below grade. An example of a sample designation is as follows:

SWMU1-B2-15

SWMU1 - SWMU area prefix.

B2 - Soil boring sample number.

15 - Sample interval depth (feet below grade).

2.5.2 Sample Containers, Preservation, Holding Times

Sample containers, preservation methods, and holding times to be followed will be consistent with those presented in USEPA SW-846. Using that guidance, the following will be applicable to soil samples during this RFI investigation:

EPA Test Method	Container	Volume	Preservation	Holding Time(Max)
8015	6" Tube	1 Filled Tube	Cool to 4°C	7 days
	Liter Amber Jar	1 Filled Jar		
8240	6" Tube	1 Filled Tube	Cool to 4°C	14 days
	40 ml VOA	3 Filled Bottles		
6000	6" SS Tube	1 Filled Tube	Cool to 4°C	30 days
TO-14	suma canister	1 filled canister	Cool to 4°C	30 days

2.5.3 Field and Shipment Chain-of-Custody

A sample is under custody if it is in the sampler's possession or in his/her view after being in his/her possession, or if the sample was in the sampler's possession and then locked up, or placed in a designated secure area. The following procedures will be used in the field:

1. The field geologist is responsible for the care and custody of the samples collected until they are delivered to the analyzing laboratory or entrusted to a carrier. As few people as possible should handle the samples.

2. Sample/core logs and data forms will be used to document the data collection activities. Entries will be made in ink with no erasures. A single stroke will be used to cross out incorrect information; corrections will be dated and initialed. The

sample/core log and data form will be used to record a variety of information, including date, start and end time of activities, names of all sampling team members, weather conditions, sample location, equipment used to collect sample, depth of sample, time of collection, sample description, sample identification number, and the volume and number of containers.

3. Chain-of-custody sample forms will be completed in the field to the fullest extent possible prior to sample shipment. They will include the following information: sample number, time collected, source of sample and location, depth from which sample was taken, preservative, and name of sampler. These forms will be filled out in a legible manner, using waterproof ink, and will be signed by the sampler. Similar information will be provided on the sample label, which will be securely attached to the sample bottle. In addition, sampling forms will be used to document collection, filtration (if required), and preparation procedures.

4. The supervising field manager will review all field activities to determine whether proper custody procedures were followed during the field work and will decide if additional samples are required.

2.5.3.1 Transferring Custody for Shipment

The following procedures will be used when transferring custody of samples:

1. Samples will always be accompanied by a chain-of-custody record completed according to the protocols outlined in this section. When transferring samples, the individuals relinquishing and receiving them will sign, indicate the date, and note the time on the chain-of-custody record. This record documents the sample custody transfer from the sampler to the laboratory, often through another person or agency. Upon arrival at the laboratory, internal custody procedures will be followed, in accordance with standard laboratory procedures.

2. Samples will be packaged properly for shipment with preservative and dispatched to the laboratory for analysis with individual custody records accompanying each shipment. Shipping containers will be sealed for shipment to the laboratory. The method of shipment, courier name, and other pertinent information will be entered in the remarks section of the chain-of-custody record.

3. All shipments will be accompanied by the chain-of-custody record identifying the contents. The original record will accompany the shipment; a copy will be retained by the field sampler.

4. Proper documentation will be maintained for shipments by common carrier.

2.5.3.2 Sample Shipment Procedures

The following procedures will be followed when shipping samples for laboratory analysis:

1. Samples requiring refrigeration will be promptly chilled with ice to a temperature of 4°C and packed in an insulated cooler for transport to the analyzing laboratory.

2. Only shipping containers that meet all applicable state and federal standards for safe shipment will be used.

3. To provide a means of detecting any potential tampering during shipment, all shipment containers (coolers) will be affixed with signed chain-of-custody seals. Two seals will be affixed to each cooler, on opposite ends. In addition, 2-inch wide transparent tape will be wrapped entirely around the cooler.

4. The field chain-of-custody record will be placed inside the shipping container in a sealed plastic envelope after the courier has signed the document.

5. Shipment will be made by overnight courier or picked up by laboratory personnel within 24 hours of sampling.

2.6 FIELD MEASUREMENTS

This section discusses field measurement techniques and procedures planned during the RFI investigation.

2.6.1 Field Instruments/Media

The media planned for investigation during this RFI is the subsurface soil matrix. One field instrument is planned for use which is a flame-ionization detector (FID). This instrument is hand held and measures total volatile organics from released vapors in the soil. A discussion of methodology is presented in Section 2.6.3.

2.6.2 Measurement Conditions

A FID will be used as a screening tool prior to submittal of samples to the laboratory for every sample obtained. Measurement by this method will aid in the determination of the samples submitted for delineation of the contaminated area.

2.6.3 Locations/Methodology

Samples taken from all locations at all depths will be measured with a FID field instrument. Soil from a second stainless steel tube (taken from the sampler adjacent to the tube to be transported to the laboratory) will be placed in a Zip-Loc ™ plastic bag, and the head space in each plastic bag will be checked for total volatile organic compounds by FID instrument. The sample will be allowed to equilibrate to ambient air temperature, then the plastic bag will be pierced, and a reading will be taken. Readings will be recorded on the sample/core log.

2.6.4 Measurement Parameters/Frequency

The field PID will measure total volatile organics in the soil sample vapors. A PID measurement will be taken once for each soil sample obtained for potential analysis at the laboratory.

2.6.5 Documentation/Calibration

Instruments and equipment used to gather, generate, or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturers' specifications.

Equipment to be used during the field sampling will be examined to certify that it is in operating condition. This includes checking the manufacturer's operating manual and the instructions for each instrument to ensure that maintenance requirements are being observed. Field notes from previous sampling trips will be reviewed so that the notations of any prior equipment problem are not overlooked and necessary repairs have been made.

Calibration of field instruments will be performed at the intervals specified by the manufacturer or more frequently as conditions dictate. A log book will be kept documenting calibration results for the PID field instrument. The log book will include the date, standards, personnel, and calibration results.

3.0 SAMPLE ANALYSIS

This section will discuss laboratory procedures for sample storage, analysis, data reduction and internal quality control.

3.1 LABORATORY CHAIN-OF-CUSTODY

Upon arrival at the laboratory, the samples are immediately taken to the sample receiving area where they are logged into a sample registry by the sample custodian. The date and time received are recorded in the sample registry. The shipping container is immediately opened, and the temperature of the shipping container is obtained by measuring the temperature of the trip sample. The arrival temperature is documented on the chain-of-custody form.

Shipping containers arriving at the laboratory with custody seals are inspected for integrity. It is noted on the form if the chain-of-custody seal is intact. The custody form is checked against the sample tube labels and signed by the sample custodian. The sample custodian will check the samples for seals and leakage from any of the sample tubes. Discrepancies between information on sample labels and information provided on the chain-of-custody form and broken or altered samples will be resolved with the Project Manager and Laboratory before the sample is assigned for analysis. If a custody problem occurs, the sample custodian will note it on the sample registry and notify the Project Manager. The custody form will be noted for who was notified and the resolution, if applicable.

After the chain-of-custody is verified, a laboratory project number is assigned to the samples, and recorded on the custody form and registry. The project number is recorded on all containers submitted in the project shipment.

Following the addition of the project identification number, the samples are dispersed to the appropriate storage area. When analyses are initiated, the analyst retrieves the samples from the storage area and, after use, returns them to the storage area until final disposition. Unless unused samples are requested to be saved, digests and extracts are disposed of as soon as holding times have expired or within four weeks after results are reported. When the samples have been disposed of, the sample tag will be sent to the Project Manager for placement in the evidence files.

At the end of the project, all custody forms are returned to the laboratory project manager. Copies of custody information are retained in the reporting laboratories' files.

3.2 SAMPLE STORAGE/PREPARATION

Samples will be stored at 4°C throughout the specified holding times or until the samples are analyzed. Samples will be stored separately within the laboratory according to dates received and specified analyses to be performed. Preparation methods will be in accordance with those specified in the EPA methodology referenced in Section 3.3.

3.3 ANALYTICAL PROCEDURES

Analytical methods for testing the TPH as mineral spirits, halogenated volatile organics, aromatic volatile organics and fixed gasses are those specified in the USEPA SW-846 Methodology, 3rd Edition, Volume 1B, revised in November 1993. The laboratory will follow EPA analytical methods 8015-modified (TPH-mineral spirits), 8240 (halogenated volatile organics and aromatic volatile organics), TO-14 (fixed gasses) and EPA series 6000 metals analysis for Title 22 metals.

Five percent of the total samples will be analyzed and reported by the laboratory under stringent Superfund Contract Lab Program protocols as a validation that the remaining analyses are being performed to good quality control standards.

3.4 LABORATORY INSTRUMENT CALIBRATION

The calibration procedures and calibration frequency employed by the laboratory for its equipment used in the analysis of samples for this RFI will be performed in accordance with those specified in the SW-846 Methodology. The equipment used will be a gas chromatograph for volatiles and inductively coupled plasma emission spectrometers for metals.

3.5 DATA REDUCTION, VALIDATION, REPORTING

Data collected during the RFI, including field and laboratory results, will be reduced, reviewed, summarized and reported. The reduction of the field data will consist of summarizing the raw field data, which may be presented in the form of tables, logs, illustrations, and graphs. The analytical data from the laboratory will be reduced to appropriate forms as determined by the project manager.

Data validation consists of a stringent review of an analytical data package with respect to sample receipt and handling, analytical methods, data reporting and deliverables, and document control. The quality of data generated by a laboratory is extremely important; it is an integral part of the investigation and should be clearly tied to the project goals.

The samples collected will be screened for completeness and technical compliance by the data validator(s). The information to be screened for the samples will include the following:

- The field chain-of-custody form will be checked to see if it was filled out and if samples were properly logged.

- The parameters will be checked to ensure that they were analyzed by the methods identified in the QAPP.

- The holding times will be checked to ensure that they were met for each parameter.

- Internal QA/QC data will be reviewed to confirm that blanks and spikes were analyzed for the minimum number of samples, as specified in this QAPP.

- Blank and MS/MSD data will be reviewed. If target compounds appear in blanks or if percent relative difference on duplicates is outside established limits, the reasons for these anomalies will be investigated. In such an event, sampling techniques will be discussed with the operations manager and/or the laboratory manager, and internal QA/QC data will be reviewed as appropriate.

- If data appears suspect, the specific data of concern will be investigated. Calculations will be traced back to the raw data. If the calculations did not agree with the prescribed limits, the cause will be determined and corrected, if possible.

On the basis of the data review, the data validator(s) will make judgments and comments on the quality and limitations of the data. The data validator(s) will prepare documentation of the review and conclusions to summarize any overall deficiencies that require attention. General laboratory performance will also be assessed by the data validator(s).

The data validator(s) will inform the operations manager of data quality and limitations, and assist in interacting with the laboratory to correct any data omissions and/or deficiencies. The laboratory may be required to re-run or re-submit data depending on the extent of the deficiencies and importance in meeting the DQOs within the overall context of the project.

3.6 INTERNAL QUALITY CONTROL

The field geologist will use the following types of QA/QC samples to ensure and document the integrity of the sampling procedures and the validity of the measurement data: field replicates, field blanks, and laboratory-prepared trip blanks. The frequencies for collecting the QA/QC samples are specified in Section 1.2.2.1 of this QAPP. The QA/QC sample results will be compared to acceptance criteria, as provided in Section 3.5 above and documentation will be provided showing that these criteria have been met. Any samples in nonconformance with the QC criteria will be identified and reanalyzed by the laboratory, if appropriate.

Two types of QA/QC mechanisms are used to ensure the laboratory production of analytical data of known and documented quality: analytical method QC, and program QA. The internal QC procedures for the analytical services to be provided are specified in the laboratory methodologies. These specifications include the types of control samples required (sample spikes, surrogate spikes, reference samples, and blanks), the frequency of each control, the compounds to be used for sample spikes and surrogate spikes, and the QC acceptance criteria. The laboratory will be responsible for documenting that both initial and ongoing instrument and analytical QC criteria are met in each package. This information will be included in the case narrative of the packages generated by the laboratory and will be evaluated during the project data review.

3.7 PREVENTATIVE MAINTENANCE, SYSTEM AUDITS, AND CORRECTIVE ACTIONS

3.7.1 Preventative Maintenance

A program to maintain field equipment to ensure the availability of equipment in good working order when and where it is needed has been defined. This program includes specific procedures as illustrated in the following examples:

- An inventory of equipment, including model and serial number, quantity, and condition, will be maintained. Each item will be tagged and signed out when in use, and its operating condition and cleanliness will be checked upon return. Routine checks will be made on the status of equipment, and spare parts will be stocked. An equipment manual library will also be maintained.

- The field geologist will be responsible for ensuring that the equipment is tested, cleaned, charged, and calibrated in accordance with the manufacturer's instructions before it is used in the field.

The laboratory will also follow a well-defined program to prevent the failure of laboratory equipment and instrumentation. This preventative maintenance program will be as specified in the appropriate methodologies.

3.7.2 System Audits

Performance and system audits of both field and laboratory activities will be performed on a periodic basis, as appropriate, to assure that the sampling and analysis are performed in accordance with the procedures established in this QAPP. Examples of audits that will be performed during the RFI are as follows:

- The field geologist will supervise and check, on a daily basis, the following: that the ground-water program and other field programs are conducted correctly; that monitoring wells are installed and developed correctly; that field measurements are made accurately; that equipment is thoroughly decontaminated; that samples are collected and handled properly; and that field work is accurately and neatly documented. Field log forms will be filled out daily during drilling, installation, and development of the new monitoring wells, and during the sampling programs.

- The data validator(s) will review, on a timely basis, the data package submitted by the laboratory to check the following information: that all requested analyses were performed; that sample holding times were met; that the data were generated using the appropriate methodology, level of QC effort and reporting; and that the analytical results are in conformance with the prescribed acceptance criteria. The data validator(s) will evaluate the data quality and limitations on the basis of these factors.

- The Project Manager will oversee the field geologist and data validator(s), and check that the management of the acquired data proceeds in an organized and expeditious manner.

- As discussed in the SW-846 Methodology, audits of the laboratory are performed on a regular basis by regulatory agencies.

3.7.3 Corrective Actions

Any persons identifying an unacceptable condition will notify the field geologist, where applicable, and/or the project manager. The project manager, with assistance from a QA/QC officer, will be responsible for developing and initiating appropriate corrective action and verifying that the corrective action has been effective. For laboratory analysis, both the identified deviations and corrective actions will be documented.

Corrective actions may include repeating measurements, re-sampling and/or re-analysis of samples, and amending or adjusting project procedures. If warranted by the severity of the problem (e.g., if monitoring wells require resampling or if the project schedule may be affected), the

agencies will be notified. Additional work, which is dependent upon a questionable activity, will not be performed until the problem has been eliminated.

3.7.4 Turnaround Time

Turnaround time for laboratory analysis will be a standard 14 days unless specified otherwise by Safety-Kleen.

4.0 REFERENCES

Bleyler, 1988a. Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses.

Bleyler, 1988b. Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses.

California Department of Water Resources, January 1990. California Well Standards, Final Draft, Bulletin 74-90 (supplement to Bulletin 74-81).

U.S. Environmental Protection Agency (USEPA), 1983. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80.

_____, 1986, NEIC Policies and Procedures, EPA-330/9-78-001-R.

_____, 1987, Data Quality Objectives: Development Guidance for Uncontrolled Hazardous Waste Site Remedial Response Activities, OSWER Directive 9355.0-7B, Washington D.C., Hazardous Site Control Division.

_____, 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA.

_____, 1989, Region II CERCLA Quality Assurance Manual, Revision I.

_____, 1991a. Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM02.1.

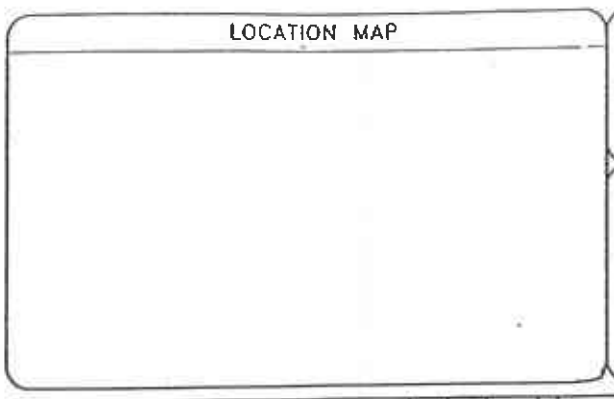
_____, 1991b. Contract Laboratory Program Statement of Work for Organic Analysis, LM01.8.

_____, 1986, revised 1989, Test Methods for Evaluating Solid Waste (SW-846).

_____, March 1987, Data Quality Objectives for remedial response activities, Development Process," EPA/540/6-87-004, OSWER Directive No, 9355.0-07B.

State of California Environmental Protection Agency, Department of Toxic Substances Control, June 1994, Corrective Action Orientation Manual.

LOCATION MAP



LOG OF BORING -

SAFTY KLEEN BRANCH SERVICE CENTER

WELL CONSTRUCTION	DEPTH(FT)	BLOWS/FT	P/O	SAMPLE DEPTH	SAMP. RETAINED	GRAPHIC	LITHOLOGIC DESCRIPTION
	5						
	10						
	15						
	20						
	25						
	30						

DRAWN BY:
DWG NAME:
DISK NO.:
LAST UPDATE:

—

SHEET 1 of 1

DRAFTER:
APPROVED:
CHECKED:
DRAWING:
FILE:
PRJCT NO.:
DWG DATE:

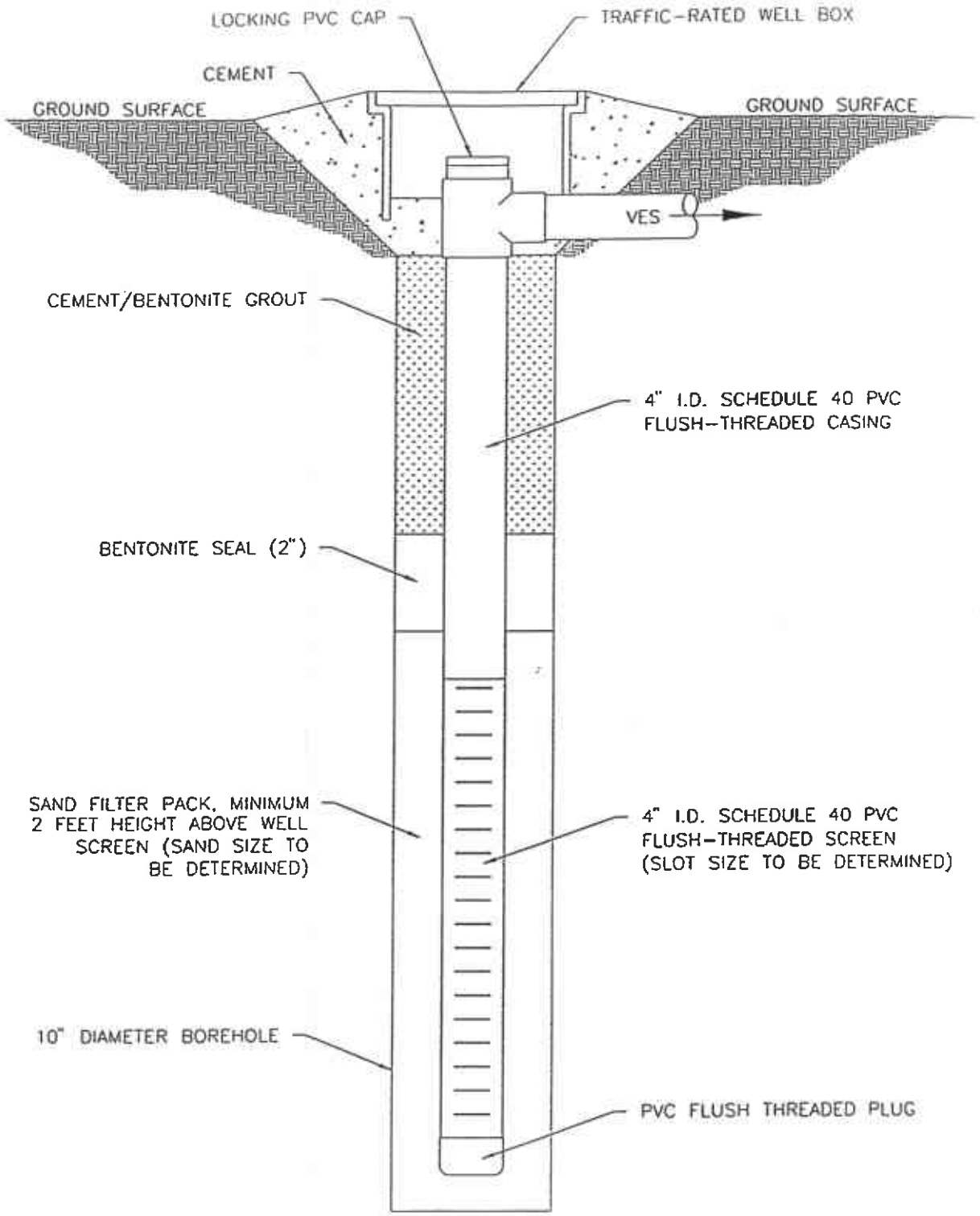
NOT TO SCALE

EXAMPLE SOIL BORING LOG

SAFETY-KLEEN BRANCH SERVICE CENTER

FIGURE

A-1



DRAFTER:
APPROVED:
CHECKED:
DRAWING:
FILE:
PRJCT NO.:
DWG DATE:

EXAMPLE VADOSE-ZONE WELL CONSTRUCTION

SAFETY-KLEEN BRANCH SERVICE CENTER

NOT TO SCALE

FIGURE

A-2

DRAFTER:

APPROVED:

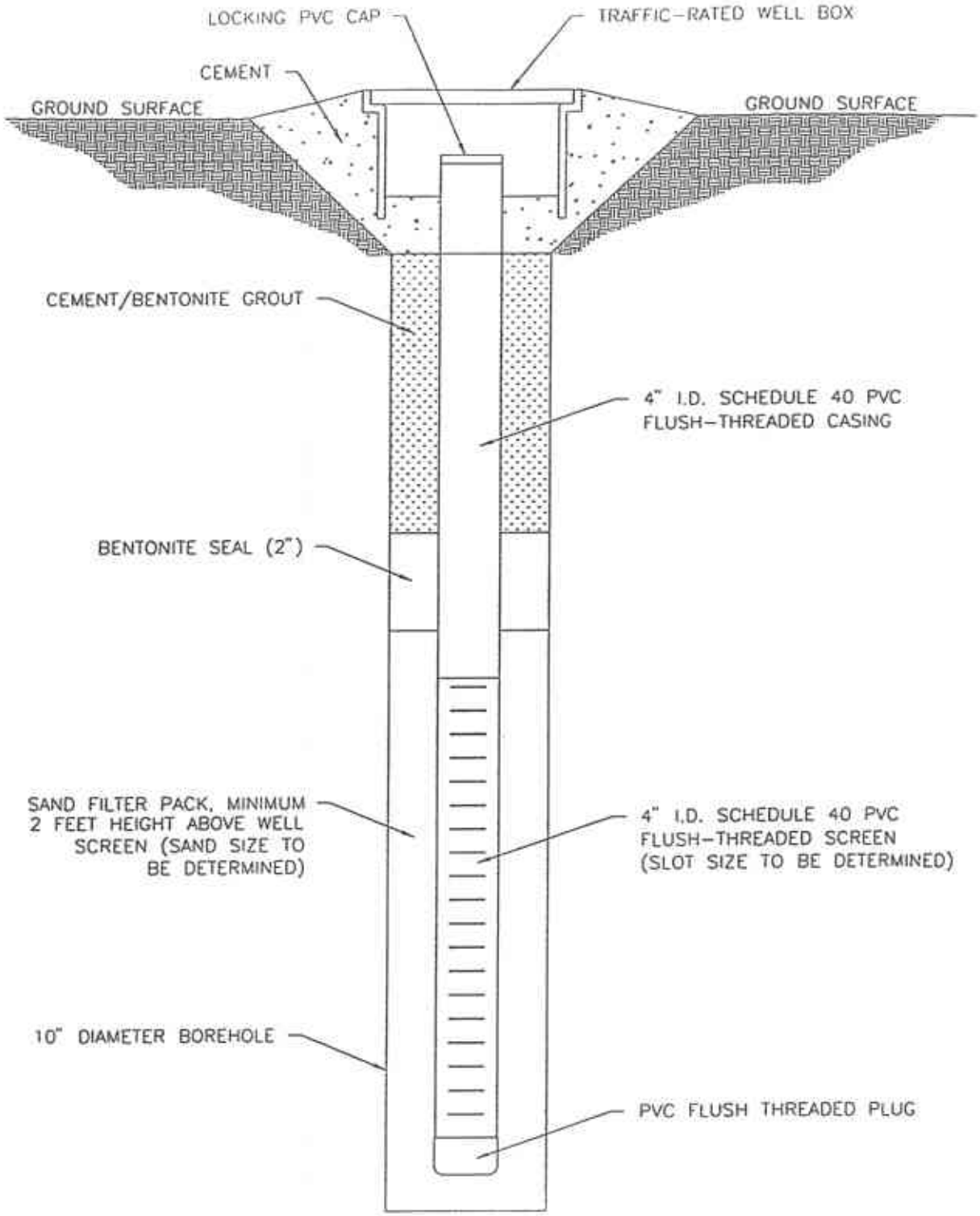
CHECKED:

DRAWING:

FILE:

PRJCT NO.:

DWG DATE:



NOT TO SCALE

EXAMPLE GROUNDWATER MONITORING WELL CONSTRUCTION

SAFETY-KLEEN BRANCH SERVICE CENTER

FIGURE

A-3

DRAFTER: | APPROVED: | CHECKED: | DRAWING: | FILE: | PROJT NO.: | DWG DATE:

GROUND WATER SAMPLING FORM

Job Name _____ Well No. _____

Job Number _____ Well Type: O Monitor O Extraction O Other _____

Recorded by _____ Well Material: O PVC O St. Steel O Other _____

Date _____ Time _____

Sampled by _____ (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches)

O 2-inch O 4-inch O 6-inch O Other _____

Total Depth of Casing (TD in feet BTOC) _____

Water Level Depth (WL in feet BTOC) _____

Number of Well Volumes to be purged (# Vols)

O 3 O 4 O 5 O 10 O Other _____

PURGE METHOD

O Bailer - Type: _____

O Submersible O Centrifugal O Bladder, Pump No.: _____

O Other - Type: _____

PUMP INTAKE SETTING

O Near Bottom O Near Top O Other _____

Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)

from _____ to _____

PURGE VOLUME CALCULATIONS

(_____ TD (feet) - _____ WL (feet)) X _____ D (inches) ^{2}X _____ # Vols X 0.0408 = _____ gallons

Calculated Purge Volume

PURGE TIME

_____ Start _____ Stop _____ Elapsed

PURGE RATE

_____ Initial _____ gpm _____ Final _____ gpm

ACTUAL PURGE VOLUME

_____ gallons

FIELD PARAMETER MEASUREMENT

Volume Since Purging Began	pH	Cond (umhos/cm)	T O °C O °F	Other _____

Volume Since Purging Began	pH	Cond (umhos/cm)	T O °C O °F	Other _____
Blank rmv				

Observations during Purging (Well Condition, Turbidity, Color, Odor): _____

Discharge Water Disposal: O Sanitary Sewer O Storm Sewer O Other: _____

WELL SAMPLING

SAMPLING METHOD

O Same As Above

O Bailer - Type: _____

O Grab - Type: _____

O Submersible O Centrifugal O Bladder, Pump No.: _____

O Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: _____

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

SUMMARY OF ANALYTICAL RESULTS - In Parts Per Billion (unless otherwise noted)

Laboratory						
Lab Sample ID						
Ethylbenzene						
Benzene						
Toluene						
Ethylbenzene						
Xylenes						
Ethyl Benzol						
Oil and Grease						

Notes: _____

GROUNDWATER SAMPLING FIELD DATA FORM

SAFETY-KLEEN BRANCH SERVICE CENTER

NOT TO SCALE

FIGURE A-4

APPENDIX B

SAFETY-KLEEN CORP
HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

Safety-Kleen - Oakland
400 Market Street
Oakland, California

Safety-Kleen Corporation
16540 S.E. 130th Street
Clackamas, Oregon 97015

Submitted by:
***SECOR* International Incorporated**
1390 Willow Pass Road, Suite 360
Concord, California 94520-5250

September 13, 1995

SECOR Project No. 70005-009-10

SECOR

HEALTH AND SAFETY PLAN
REVIEW AND APPROVAL

CLIENT: Safety-Kleen Corp. SITE NAME: Safety-Kleen - Oakland

PROJECT NAME: Safety-Kleen - Oakland PROJECT NUMBER: 70005-009-10

START DATE: September 18, 1995 END DATE: March 18, 1996

PLAN EXPIRATION DATE: March 18, 1996
(Last day of expected field work or no longer than 6 months).

Keith Kilcoin Plan Completed By	Signature: Keith Kilcoin	Date: 9/14/95
Greg Hoehn Project Manager	Signature: Greg Hoehn	Date: 9/14/95
Keith Kilcoin Health and Safety Coordinator	Signature: Keith Kilcoin	Date: 9/14/95
Bob Robitaille Site Health and Safety Officer	Signature: Bob Robitaille	Date: 9/14/95
Paul MacKinnon Industrial Hygienist or Safety Professional	Signature: Paul MacKinnon	Date: 9/14/95
_____ Subcontractor Field Supervisor	Signature: _____	Date: _____

This Health and Safety Plan has been written for the use of *SECOR* and its employees. It may also be used as a guidance document by properly trained and experienced *SECOR* subcontractors. However, *SECOR* does not guarantee the health or safety of any person entering this site.

Due to the potential hazardous nature of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards which may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. The health and safety guidelines in this Plan were prepared specifically for this site and should not be used on any other site without prior research by trained health and safety specialists.

SECOR claims no responsibility for its use by others. The Plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if these conditions change.

TABLE OF CONTENTS

LIST OF ATTACHMENTS

SECOR
LOCAL EMERGENCY AND PROJECT TELEPHONE NUMBERS
(POST)

LOCAL EMERGENCY NO.S*:

	NAME	TELEPHONE NO.
Hospital	Peralta Hospital	510-451-4900
Ambulance	Ambulance-Critical Care Transport	800-533-8600
Police/Sheriff	City of Oakland Police	510-238-3211
Fire	City of Oakland Fire Department	510-444-1616
Other:		

*Include numbers other than "911".

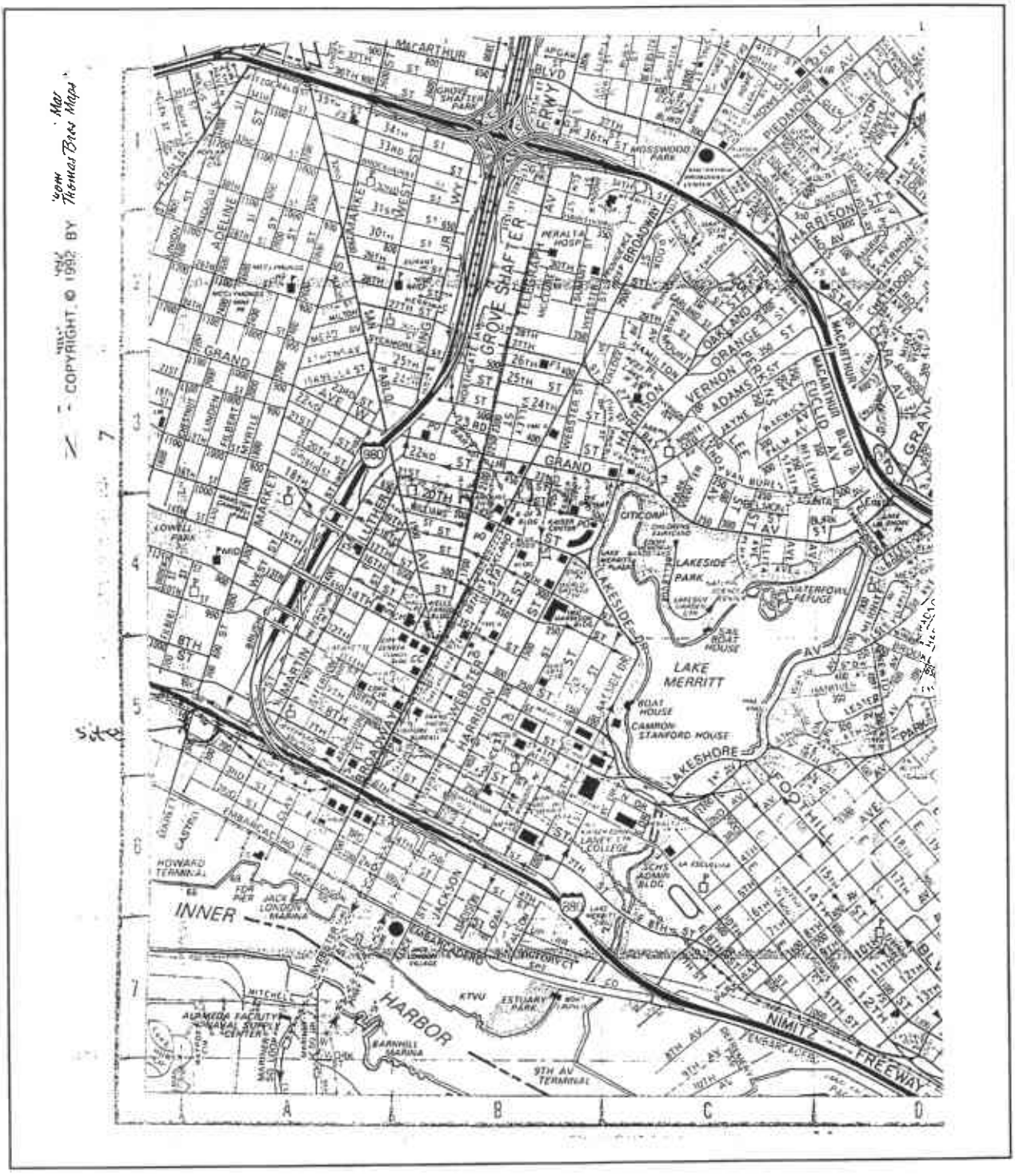
PROJECT PERSONNEL NO.S:

	NAME	TELEPHONE NO.
Site Health and Safety Officer	Bob Robittaile	916-635-9601 (ON-SITE PHONE)
Project Manager		
Principal-in-Charge	Greg Hoehn	510-686-9780/510-246-8929 Pager
Site Contact	John Myer	510-832-7942
Client Contact	Chip Prokop	503-655-2769
Health and Safety Supervisor	Paul McKinnon	403-266-2030
Health and Safety Director	Dave Keller	619-658-7481
Human Resources Director	Marguerite Agrella	619-658-7472
Other:		

GOVERNMENTAL CONTACT NO.S:

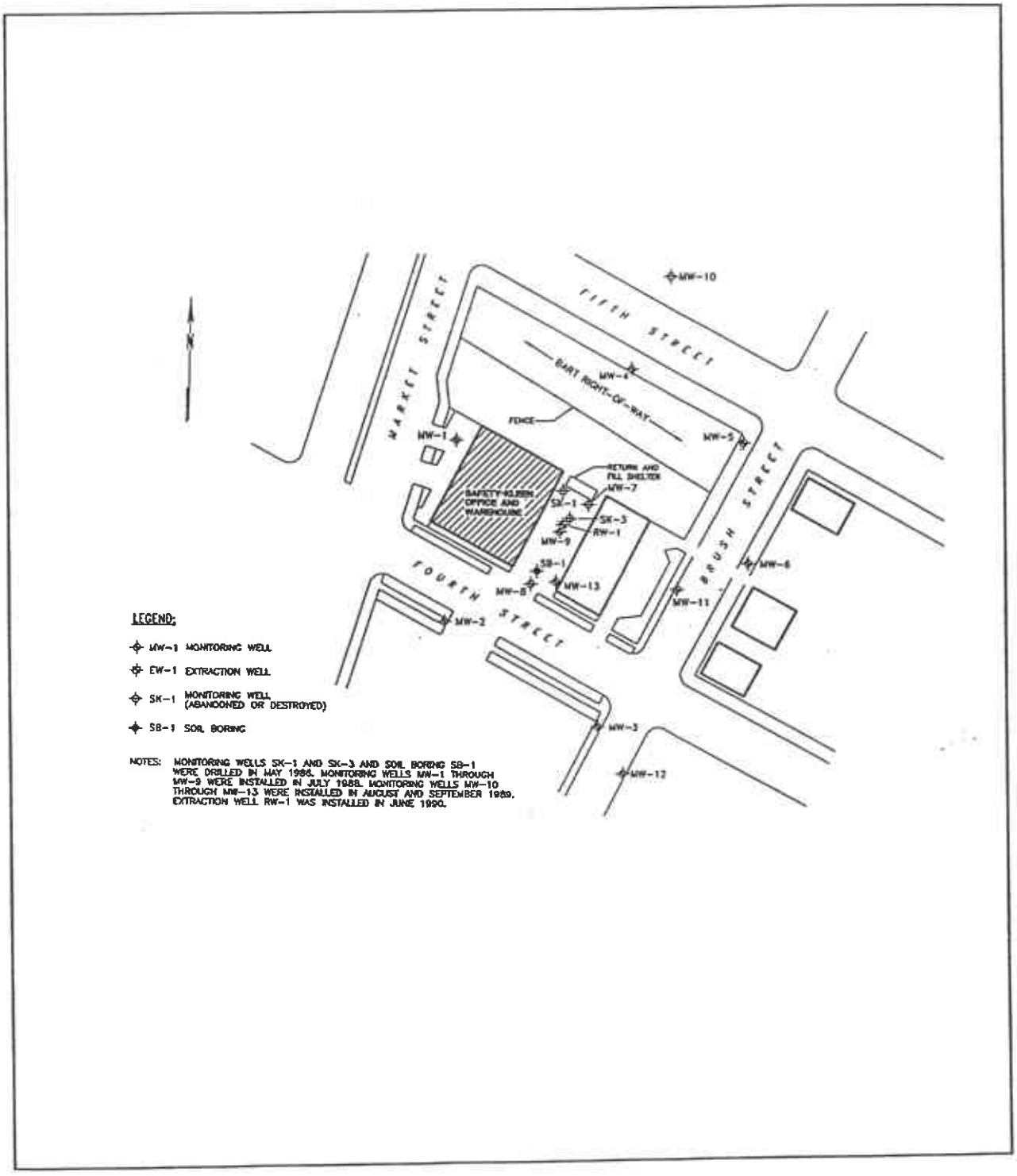
	NAME	TELEPHONE NO.
CAL-EPA-OTSC	Katherine Leibel	310-590-4895
Alameda County	Jennifer Eberle	510-567-6700
Other:		

HOSPITAL LOCATION MAP (attach or draw):
(POST)



SITE MAP (attach or draw):

(POST)



I. TASK SPECIFIC HEALTH AND SAFETY RISK ANALYSIS

A. Predominant Potential Site Chemical Hazards

CHEMICAL (OR CLASS)	PEL/TLV	OTHER PERTINENT LIMITS	WARNING PROPERTIES	ROUTES OF EXPOSURE OR IRRITATION	ACUTE HEALTH EFFECTS	CHRONIC HEALTH EFFECTS/ TARGET ORGANS
Mineral spirits, petroleum naphtha, stoddard solvent, petroleum distillates	400/300 ppm	LEL = 0.7%	Characteristic odor similar to kerosene	Inhalation, dermal, ingestion	Skin, eye, mucous membrane irritants, staggered gait, slurred speach, mental confusion	CNS carcinogen kidneys, liver, respiratory system, skin
Perchloroethylene (Tetrachloroethylene)	25/25 ppm	STEL = 100 ppm IDLH = 500 ppm	Colorless liquid with an odor like ether or chloroform	Inhalation, ingestion, skin/eye irritation	Nausea, flushed face and neck, vertigo, dizziness, headache	Carcinogen, liver, kidneys, eyes, upper respiratory system, CNS
Toluene	100/50 ppm	IDLH = 2000 ppm	Colorless liquid with an aromatic odor	Inhalation, ingestion, dermal	Dizziness, drowsiness, staggered gait, nausea, vomiting	Eyes, skin, liver, CNS, blood, kidneys, gastrointestinal tract
Ethylbenzene	100/100 ppm	PEL-STEL = 125 ppm	Colorless liquid with an aromatic odor	Inhalation, ingestion, dermal	Dizziness, drowsiness, staggered gait, nausea, vomiting	Eyes, skin , liver, CNS, blood, kidneys, gastrointestinal tract
Xylenes	100/100 ppm	PEL-STEL = 150 ppm PEL Ceiling = 300 ppm IDLH = 1000 ppm	Colorless liquid with an aromatic odor	Inhalation, ingestion, dermal	Dizziness, drowsiness, staggered gait, nausea, vomiting	Eyes, skin, liver, CNS, blood, kidneys, gastrointestinal tract

PEL-TWA = Permissible Exposure Limit-Time Weighted Average (8 hours).
TLV-TWA = Threshold Limit Value-Time Weighted Average (8 hours).
STEL = Short Term Exposure Limit (15 minutes).
IDLH = Immediately Dangerous to Life or Health.
C = Ceiling Limit (not to be exceeded, even instantaneously).
SKIN = Skin absorption can be a significant part of exposure.

B. Action Level Table for Chemical Monitoring*

CHEMICAL (OR CLASS)	MONITORING EQUIPMENT	TASK NO.	MONITORING FREQUENCY/ LOCATION (source, area or breathing zone).	LEVEL FOR RESPIRATOR USE	LEVEL FOR WORK STOPPAGE
Mineral spirits, petroleum naphtha, stoddard solvent, petroleum distillates	PID	2-3	Continuous, If ≥ 5 ppm, sample in breathing zone	≥ 50 ppm (Breathing Zone)	500 ppm
VOCs	PID	2-3	Continuous, If ≥ 5 ppm, sample in breathing zone	≥ 50 ppm (Breathing Zone)	500 ppm
Perchloroethylene	Dräger	2-3	Continuous, If ≥ 5 ppm, sample in breathing zone	10 ppm (Breathing Zone)	100 ppm

- Record peak readings every 30 minutes, or more frequently as necessary.
- Set alarm on instrument at 5 ppm.
- Calibrate equipment every day.
- Leak check colorimetric tube pump daily.

***Complete Attachment 5 (Air Monitoring Equipment Calibration/Check Log) and Attachment 6 (Air Monitoring Log).**

C. Personal Protective Equipment Requirements:

Level 'D': Safety glasses, hard hat, disposable ear plugs, long-sleeved shirt and pants, steel-toe boots. contact with moist soil or liquid:

Gloves Inner: Nitrile Outer: Nitrile

Chemical resistant boots or boot covers Tyvek (PE coated) or rubber boots

Chemical resistant suit Tyvek (PE coated)

Other

Level 'C': Level 'D' plus:

Air-purifying Respirator (Half- or Full-Face)

Cartridges Organic Vapor/HEPA combination

Gloves Inner: Nitrile Outer: Nitrile

Chemical resistant boots or boot covers Tyvek (PE coated) or rubber boots

Chemical resistant suit Tyvek (PE coated)

Other

II. GENERAL SITE REQUIREMENTS AND BACKGROUND INFORMATION

A. Health and Safety Plan Responsibilities

- Prior to beginning on-site work, the Project Manager will ensure Attachments 1-4 are completed.
- The Site Health and Safety Officer (SHSO) will ensure Attachments 5-8 are completed the first day of on-site work. Within 24 hours of the end of field work, the SHSO will submit the completed HASP to the Health and Safety Coordinator (HSC).
- The Site Health and Safety Officer will oversee the overall Plan. He/she has the authority to stop w or prohibit any personnel from working on the site at any time for not complying with any aspect of the Plan.
- The Subcontractor Field Supervisor is responsible for implementing the Plan for his/her own employe
- Each person on the site has responsibility for their own health and safety, as well as assisting others in carrying out the Plan. Any person observed to be in violation of the Plan should be assisted in comply with the Plan, or reported to the Site Health and Safety Officer or the Subcontractor Field Supervis
- Any site personnel may shut down field activities if there is a real or perceived immediate danger to life or health.

B. Minimum Training, Respirator Fit-Testing, and Medical Surveillance Requirements for Site Personne

- 40 hr. Hazardous Waste Operations Training (HAZWOPER)
- 8 hr. Annual HAZWOPER Refresher Training
- 8 hr. Supervisor HAZWOPER Training for Site Health and Safety Officer
- First Aid and CPR Training for Site Health and Safety Officer
- Annual Respirator Fit Testing
- Annual Medical Clearance

C. Purpose of Field Work:

Drill soil borings in the vicinity of the USTs. The soil samples will be analyzed for TPHMs, volatile orga compounds (VOCs), and BTEX. The work will be performed in order to determine the extent of possible soil contamination in the vicinity of the USTs. No additional work is planned at this time.

D. Detailed Description of Specific Tasks Planned (Number each separate task in order of progression. The t numbers assigned here will be referred to throughout the Plan):

1. Utility Clearance, Site Walk-Through, "Tail-Gate" Safety Meeting
2. Boring
3. Soil and Groundwater Monitoring

4. _____

5. _____

6. _____

7. _____

E. Initial Site Entry Has this been performed by *SECOR*? (YES/NO): __ If YES, describe:

Three single-walled underground storage tanks (USTs) were removed and replaced with two new 12,000-gal double-walled tanks in June and July 1990. During the single-walled tank removal, mineral spirits impacted soil was excavated from the tank pot. Additionally, a product recovery well and a vapor extraction system withdra network were installed in the tank pit area. The product pumping system installed in recovery well (RW-1 to remove separate-phase product from the water table began operation on January 19, 1993. A system to extr and treat soil vapor began full-scale operation on June 1, 1993.

F. Interior Work & Confined Spaces

Will any work be done inside an enclosure, building, or confined space? (YES/NO): No . If YES, describ

No.

Attachment 13 will be completed for permit-required confined spaces.

G. Excavation and Trenching

Excavation and/or trenching will be done on this site? (YES/NO): No . If YES, describe including propo dimensions and if entry may be required (including mounting tanks for vacuuming, purging, sampling, etc.)

No.

Attachment 12 will be completed for excavations of any depth and requiring entry.

H. Landfills and Other Areas Potentially Containing Explosive Gas or Vapor
Site is in an area containing a current/former landfill, or the geology contains known/suspected pockets of explosive gas/vapor? (YES/NO) No . If YES, describe:

No.

I. Time of On-Site Work

Work will be done during daylight hours? (YES/NO): Yes . If NO, describe:

J. Hazardous Materials

Will any hazardous materials (chemicals) be used on-site? (If so, include MSDS's under Attachment 1 (YES/NO): No . If YES, describe:

No.

K. Background Information (e.g.,historical operations and environmental investigations):

In June and July of 1990, three single-walled USTs were removed and replaced with two new 12,000-gal double-walled tanks. In the past a soil vapor extraction system (SVE) has operated at the site. The SVE has not operated at the site. The SVE has not operated since November 24, 1994. Groundwater monitoring and va extraction is on-going at the site. For the quarterly monitoring period between March, April and May 1995, the work included monitoring (measuring depth to water) 12 groundwater monitoring wells and sampling 10 groundwater monitoring wells.

III. SITE CHARACTERISTICS

A. **Facility Description:** (Identify structures, buildings, pits, impoundments, and work area.):

The subject site is currently occupied by a Safety-Kleen Distribution Facility with one on-site office/wareho building and one return and fill shelter where products and wastes are handled. Mineral spirits dispens activities are conducted at the site on a daily basis (Monday through Friday).

B. **Site Status:** Occupied (Yes/No): Yes (If Yes, describe current activities and relationship to field work):

Inactive Safety-Kleen Facility.

C. **Unusual Site Features:** (water supply, telephone, radio, powerlines, traffic patterns, gas lines, water mai terrain, vacant lots, debris, other physical hazards, etc.):

Water, telephone, gas lines, and electric lines all supply the Site. Utilities are subsurface.

D. **Site Map:** [see p. iii - include adjacent buildings, encumbrances, site facility, previous project location (if an proposed project location, and location of nearest phone].

E. **Contaminant Description** (Maximum concentrations from most recent investigation.):

	Substance	Source of Contamination	Source of Sample (soil, water, etc.)	Sample Concentration	Environmental Regulatory Action Level*
1.	Mineral Spirits	USTs	Soil	ND	N/A
2.	Toluene	USTs	Soil	ND	N/A
3.	Ethylbenzene	USTs	Soil	ND	N/A
4.	Xylenes	USTs	Soil	ND	N/A
5.	VOCs	USTs	Soil	ND	N/A
6.	Perchloroethylene	Drum	Soil	ND	N/A
7.	Tetrachloroethylene	Drum	Soil	ND	N/A

NOTE: VOCs = Volatile Organic Compounds

Reference:

SECOR Quarterly Groundwater Monitoring and Soil Vapor Extraction Report, June 28, 1995.

*For HASP reference purposes only.

IV. WASTE CHARACTERISTICS

A. Waste Generation [Type(s)/Quantities Expected]:

Anticipated: Yes _____ No _____

Types: Liquid _____ Solid __X__ Sludge ____ Other (describe) _____

Quantity (Expected Volume): 1 cubic yard of soil

B. Characteristics (Expected):

Corrosive ____ Flammable/Ignitable __X__ Radioactive _____ Toxic ____X__

Reactive _____ Unknown ____

Other (specify) _____

C. Packaging requirements for waste material (Expected):

- open head 55-gallon drum Soil
- closed head 55-gallon drum _____
- overpack drum _____
- baker tanks _____
- lined waste bins _____
- other _____

D. Disposal and/or Treatment Methods Proposed:

Soil will be disposed of by Safety-Kleen at an approved facility.

Safety-Kleen will be responsible for characterizing, packaging, labeling, storing, disposing of suspected or known waste.

E. Potential Non-chemical Hazards

	YES	NO
Overhead/underground hazards		
• Overhead (describe) _____		X
• Underground (describe) _____	X	
Equipment hazards		
• Geoprobe		X
• Drilling	X	
• Excavation		X
• Machinery	X	
Heat exposure	X	
Cold exposure		X
Oxygen deficiency		
Confined space		X
Noise		X
Ionizing radiation		X
Non-ionizing radiation		X
Fire/Explosion	X	
Electrical		X
Biological		
Work Surfaces		
• Holes/ditches	X	
• Steep grades		X
• Slippery surfaces		X
• Uneven terrain	X	
• Unstable surfaces		X
• Elevated work surfaces		X
Shoring		X
Other: _____		

F. Task Specific Hazards:

	TASK	HAZARD RATING	IDENTIFIED/ ANTICIPATED HAZARDS
1.	Utility Clearance	Low	Traffic
2.	Soil Drilling	Moderate	Tripping, machinery, chemical contact, noise, traffic
3.	Sampling	Moderate	Tripping, machinery, chemical contact, noise, traffic
4.			
5.			
6.			
7.			

G. Overall Hazard Rating: (Unknown, low, moderate, serious, or extreme):

Moderate.

V. GENERAL SITE HEALTH AND SAFETY PROCEDURES

A. **MAPS - Site Map and Hospital Location Map (p. iii and p. ii)**: Hospital route must be clearly marked. PO SITE AND HOSPITAL LOCATION MAPS.

B. **Post "Local Emergency and Project Telephone Numbers"; p. i**

C. **Site Security:** Site Health and Safety Officer is responsible for preventing unauthorized entry onto the site and for knowing who is on-site at all times.

1. Work will be done around heavy equipment (e.g. drill rig, backhoe, etc.):
(YES/NO): Yes

If YES, describe: Drilling work will be performed by a subcontracted hollow-stem auger drillrig. If any drilling will occur inside, this Health and Safety Plan will be modified.

2. Work will be done in or adjacent to a road, street or highway:
YES/NO Yes

If YES, describe: Work will be performed near roadways on the Safety-Kleen facility. Cones will be placed to alert traffic.

3. Reflective vests will be worn around heavy equipment or when working in or around traffic.

4. Prior to working on-site, a general inspection for hazards will be made by the Site Health and Saf Officer.

5. Access to the work site will be controlled in the following manner:

- Work site area perimeter identification method (describe equipment and procedures to be use

  Boring locations will be marked by barricades, caution tape and traffic cones.

- Work area security (on- and off-hours):

  Entire facility is locked and gated entry. Soil boring locations will be filled with cement or backfilled at the end of the work day.

6. If an on-site command post is necessary, ensure that it is located upwind from sources, give prevail winds, and locate/identify on Site Map (p. iii).

7. On-site personnel must be able to call off-site via a telephone within 150 feet of work.

8. Designate at least one vehicle for emergency use.

D. Work Limitations and Restrictions:

- No eating, drinking, or smoking on-site, except in the support zone.
- No rings, watches, bracelets, necklaces, or other jewelry that could trap chemical contamination or get caught in moving equipment.
- No contact lenses on-site.
- No facial hair that would interfere with respirator fit.
- Buddy system at all times in Level 'C' or 'B', or when working around heavy equipment like backh or drill rigs.
- Heat and Cold Stress
  - The Site Health and Safety Officer will monitor weather broadcasts before the start of outd work each day, and more frequently as necessary. No work will be done outdoors dur hazardous weather conditions.
  - Heat Stress
    - For temperatures above 70°F, each person will take their pulse at rest. At breaks, the pulse should be less than 110 beats per minute after one minute. Before returning to work, the pulse should be no more than 10 beats greater than the resting pulse.
    - If the air temperature is greater than 95°F, work should be done for 30 minutes wit a rest break of 10 minutes for Level D. For Level C, work should be done for 20 minutes, with a rest break of 10 minutes. At least 8 ounces (1 cup) of cool wa Gatorade-type drink, or dilute fruit juice should be consumed at each rest break or at least one cup every 20 minutes.
    - Work should stop if any of the following symptoms occur: muscle spasm and/or pain in the limbs or abdomen (heat cramps); weak pulse, heavy sweating, dizziness, and fatigue (heat exhaustion); or rapid pulse, no sweating, nausea, dizziness, and/or confus (heat stroke). Provide First Aid immediately.
    - Use sunscreen on unprotected skin to protect against ultraviolet exposure as necessa
  - Cold Stress
    - For temperatures below 40°F, adequate insulating clothing must be worn. If the temperature is below 20°F, workers will be allowed to enter a heated shelter at regu intervals. Warm sweet drinks should be available. Coffee intake should be limited.

- No one should begin work or return to work from a heated shelter with wet cloth Workers should be aware of signs of cold stress such as heavy shivering, pain in the fingers or toes, drowsiness, or irritability. Onset of any of these signs are indications for immediate return to a heated shelter.

E. Decontamination Procedures:

1. Personnel:

   Soap and water. Appropriately dispose of all contaminated PPE.

2. Sampling Apparatus:

   Wash station will be constructed and secured. Equipment will be washed with trisodium phosphate triple rinsed. Wash water will be contained.

3. Heavy Equipment:

   Wash station will be constructed and secured. Equipment will be steam cleaned. Wash water will be contained.

4. Level 'C' Decontamination Stations (in order from exclusion zone to support zone):

   a) Equipment drop
   b) Wash and rinse outer garment, boots, and gloves
   c) Remove outer boots and gloves
   d) Change respirator cartridges (if returning to exclusion zone)
   e) Remove inner gloves and outer garment
   f) Remove respirator
   g) Clean hands and face

5. The following equipment will be made available, or equivalent.

   - emergency eyewash,
   - soap/detergent solution and H_2O rinse (via Hudson-type sprayers),
   - soap gel or disposable wipes,
   - disposable towels,
   - plastic sheeting,
   - cleaning brushes and tubs.

F. General Procedures:

- The Utility Clearance Log and Map (Attachments 3 & 4) will be completed prior to beginning any subsurface work.
- Daily Health and Safety Briefings will be held by the Site Health and Safety Officer (Attachment 7)
- Determine wind direction, establish exclusion zone, and set up decontamination reduction zone support zone upwind when upgrading to Level 'C' or 'B'.
- Try to remain upwind when collecting samples, venting wells, etc.
- Potable water must always be available at the work site.
- If toilet facilities are not located within a 5-minute walk from the decontamination facilities, either prov a chemical toilet and hand washing facilities or have a vehicle available (not the emergency vehicle) for transport to nearby facilities.
- Provide dust control by spraying soils with water or a surfactant/water solution.
- Use ground fault circuit interrupters for plug-in electrical devices and extension cords (3-pin plugs on
- Hearing protection in the form of disposable ear plugs will be worn around heavy equipment, machine or when two individuals five feet or less apart need to shout to be heard.
- Be aware of tripping hazards with extension cords, tools, hoses, augers, etc.

G. Emergency Equipment:

- At least one ABC-type dry chemical fire extinguisher, and
- First Aid Kit.

H. Perimeter Identification and Personal Protective Equipment (PPE):

Complete the table below indicating the type of zone boundaries required for this job. Mark zone boundaries on Site Map, p. iii.

TASK NO.[1]	LEVEL OF PROTECTION REQUIRED (B, C, D; N/A)[2]		ZONE BOUNDARIES REQUIRED (b, c, d; N/A)[3]	
	PPE START	PPE UPGRADE	PPE START	PPE UPGRADE
1	D	C	D	D,B
2	D	C	D	D,B
3	D	C	D	D,B

---

1 As identified in Section II, Subpart D.

2 Level B - Self-contained breathing apparatus (SCBA) or supplied-air respirator with an escape bottle, chemically resistant suit.

Level C - Full- or half-face air-purifying respirator, chemically resistant PPE.

Level D - No respiratory protection. Safety glasses, hard hat, steel-toe boots, long-sleeved shirt and pants. Hearing protection, gloves, and other PPE as required.

3 This job will require one or all of the following "zones" or "boundaries" to be established during work.

a. Exclusion Zone - Required when workers within that zone must wear personal protective equipment. (Usually Level B or C.)

b. Contamination Reduction Zone - Required when decontamination of people and equipment leaving the Exclusion Zone is required. (Usually Level B or C.)

c. Support Zone - the location where administrative and other support activities are conducted. (Usually Level B or C.)

d. Work Area Boundary - Excludes non-workers from entering a potentially hazardous environment. (Usually Level B, C, or D.)

VI. CONTINGENCY PLAN

A. Injury or Illness:

If an injury or illness occurs, take the following action:

- Get First Aid for the person immediately.
- Notify the Site Health and Safety Officer. The Site Health and Safety Officer is responsible for immediately notifying the Project Manager, and preparing and submitting an Injury/Illness Incident Report (Attachment 9) to the Health and Safety Director (HSD) within 24 hours, as well as notifying the employee's supervisor and Principal-in-Charge. If a subcontractor employee is injured, the Subcontractor Field Supervisor will also complete their own injury/illness investigation and submit a copy of their report to the *SECOR* HSD as well.
- The Site Health and Safety Officer will assume charge during a medical emergency.

B. Site Incident:

If an incident occurs, take the following action:

- Notify the SHSO immediately. The SHSO is responsible for immediately notifying the Project Manager, and preparing and submitting a Site Incident Report (Attachment 10) to the HSD within 24 hours.

C. Local Emergency and Project Telephone Numbers (See p. ii)

D. Emergency Routes (Also see Hospital Location Map - p. i):

1. Route from on-site work area to off-site property: Exit work area boundary and proceed to 5th Street.

2. Route from off-site property to hospital: Take 5th Street and proceed east to Broadway. Go north on Broadway to 17th Street. Go West 1 block to Telegraph Avenue. Go north on Telegraph Avenue to 30th Street. Peralta Hospital is on right hand side of road.

(ATTACHMENT 1)

SECOR

EMPLOYEE TRAINING AND MEDICAL CLEARANCE

Responsibility	Name	Certification Dates					
		40-Hour HAZWOPER	8-Hour HAZWOPER Refresher	8-Hour HAZWOPER Supervisor*	First Aid/ CPR*	Medical Clearance	Other
Site Health and Safety Officer	Bob Robittaille	12/88	02/95	07/90	10/94	10/93	
Other Field Staff	Steve McCabe	04/90	08/95	1994	06/94	01/95	

*Health and Safety Officer at a minimum must have this training.

(ATTACHMENT 2)

SECOR

SUBCONTRACTOR TRAINING AND MEDICAL CLEARANCE RECORD

Subcontractor:_____

Address:_____

Employees Assigned to Project:_____

_____

I certify the above employees assigned to this project have received training, medical clearance, and respirator fit-testing according to the Health and Safety Plan and the Occupational Safety and Health Administration Standard on Hazardous Waste Operations and Emergency Response (29 CFR 1910.120). If any of these employees are injured, I will submit an injury report to the *SECOR* Health and Safety Director within 24 hours.

_____ _____

Name Signature

_____ _____

Title* Date

*Subcontractor Supervisor or Manager only.

(ATTACHMENT 3)

SECOR

UTILITY CLEARANCE LOG

Date: _____

"One-call" confirmation number and date contacted: _____

"One-call" expiration date: _____

Subcontractor locating firm and invoice number: _____

Facility contact person & telephone number: _____

Facility drawings reviewed: _____

Verbal/written sign-off of clearance by facility contact: _____

Pressurized lines/shut-off valves identified:* _____

Underground utilities/lines identified:* _____

_____

Underground utilities/lines marked on-site by: _____

_____

Overhead utilities/lines identified:* _____

Overhead utilities/marked on-site by: _____

*Mark on copy of facility drawing or include in site sketch (Attachment 5).

Clearance contact:

_____	_____	_____
Name (SECOR employee only)	Signature	Date

Clearance Reviewed by:

_____	_____	_____
Name (SECOR Project Manager)	Signature	Date

(ATTACHMENT 4)

SECOR

UTILITY CLEARNCE MAP

Safety-Kleen Corporation - Clackamas, Oregon

SECOR Project No. 70005-009-10

(ATTACHMENT 5)

SECOR

AIR MONITORING EQUIPMENT CALIBRATION/CHECK LOG

DATE	INSTRUMENT/ MODEL NO.	SERIAL NO.	BATTERY CHECK OK?	ZERO ADJUST OK?	CALIBRATION GAS (PPM)	READING (PPM)	LEAK CHECK (Colorimetric Tube Pump)	PERFORMED BY	COMMENTS

Safety-Kleen Corporation - Clackamas, Oregon

SECOR Project No. 70005-009-10

(ATTACHMENT 6)

SECOR

AIR MONITORING LOG*

DATE	TIME	LOCATION	SOURCE/AREA/ BREATHING ZONE	INSTRUMENT	CONCENTRATION/UNITS	SAMPLED BY

***Notify the Health and Safety Coordinator or Corporate Health and Safety immediately if a PEL, TLV, or other limit is exceeded.**

Safety-Kleen Corporation - Clackamas, Oregon *SECOR* Project No.70005-009-10

(ATTACHMENT 7)

SECOR

DAILY HEALTH AND SAFETY BRIEFING LOG

Date:_____

Start Time:_____

Subjects Discussed:_____

_____

_____

_____

_____

Attendees:

Print Name	Signature
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Meeting Conducted by:_____ _____

Name (Site Health and Safety Officer) Signature

(ATTACHMENT 8)

SECOR

HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT AND AGREEMENT FORM

(All *SECOR* and subcontractor personnel must sign.)

I acknowledge I have reviewed a copy of the Health and Safety Plan for this project, understand it, and agree to com with all of its provisions. I also understand I could be prohibited by the Site Health and Safety Officer or other *SEC* personnel from working on this project for not complying with any aspect of this Health and Safety Plan:

Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date
Name	Signature	Company	Date

(ATTACHMENT 9)

SECOR INJURY/ILLNESS REPORT (Use additional space as necessary)

DATE OF INCIDENT_____ CASE NO._____ TIME OF DAY_____

EMPLOYEE NAME_____ DATE OF BIRTH_____

HOME ADDRESS_____ PHONE NO._____

SEX: MALE___ FEMALE___ AGE___ JOB TITLE_____ SOCIAL SECURITY NO._____

OFFICE LOCATION_____ DATE OF HIRE_____

WHERE DID INCIDENT OCCUR? (INCLUDE ADDRESS)_____

_____

ON EMPLOYER'S PREMISES? YES___ NO___ PROJECT NAME/NO._____

WHAT WAS EMPLOYEE DOING WHEN INCIDENT OCCURRED? (BE SPECIFIC)_____

_____

HOW DID THE INCIDENT OCCUR? (DESCRIBE FULLY)_____

_____

_____

_____

WHAT STEPS COULD BE TAKEN TO PREVENT SUCH AN INCIDENT?_____

_____

_____

_____

OBJECT OR SUBSTANCE THAT DIRECTLY CAUSED INCIDENT?_____

_____

DESCRIBE THE INJURY OR ILLNESS_____ PART OF BODY AFFECTED_____

NAME AND ADDRESS OF PHYSICIAN_____

IF HOSPITALIZED, NAME AND ADDRESS OF HOSPITAL_____

LOSS OF ONE OR MORE DAYS OF WORK? YES/NO___ IF YES-DATE LAST WORKED_____

HAS EMPLOYEE RETURNED TO WORK? YES/NO____ IF YES-DATE RETURNED_____

DID EMPLOYEE DIE? YES/NO_____ IF YES, DATE_____

COMPLETED BY (PRINT) _____ EMPLOYEE SIGNATURE _____

(Supervisor or Site Health & Safety Officer)

DATE _____

SIGNATURE _____

PIC SIGNATURE _____

DATE _____

DATE _____

This report must be completed by the employee's supervisor or Site Health and Safety Officer immediately upon learning of the incident. The completed report must be reviewed and signed by the Principal-in-charge and transmitted to Corporate Health and Safety within 24 hours of the incident, even if employee is not available to review and sign. Employee or employee's doctor must submit a copy of the doctor's report to Corporate Health and Safety within 24 hours of the initial exam and any subsequent exams.

REV:4-26-95

(ATTACHMENT 10)

SECOR

SITE INCIDENT REPORT
(Attach additional documentation as necessary)

Date of Incident:_____ **Time of Incident:**_____

Location of Incident:_____ **Project Name:**_____

Project Number:_____

Type of Incident* (check those that apply):

_____ "Near Miss" _____ Vehicle Accident

_____ Underground Property Damage _____ Fire

_____ Above-ground Property Damage _____ Evacuation

_____ Chemical Exposure _____ Regulatory Agency Inspection or Violation

_____ Other (describe)_____

*Submit copy of Health & Safety Plan and Attachments for field-related incidents.

Description of Incident:_____

_____

Cause of Incident:_____

_____

Action Taken:_____

_____

Future Corrective Action:_____

_____

Estimated Amount of Damage:_____

Investigator Name	**Signature**	**Date**
Principal-in-Charge	**Signature**	**Date**

cc: Corporate Health & Safety, Vice-president of Operations, & Corporate Contracts/Admin. within 24 hours of incident.

(ATTACHMENT 11)

SECOR

MATERIAL SAFETY DATA SHEETS

MSDS1015

MATERIAL SAFETY DATA SHEET

AMEREX CORPORATION
P. O. BOX 81, TRUSSVILLE, AL 35173-0081
RESPONSIBLE PARTY: MSDS COORDINATOR
TELEPHONE: 205-655-3271
DATE PREPARED: 8-1-91
SUPERSEDES: 6-22-88
EMERGENCY TELEPHONE NO. DAY/NIGHT: CHEMTREC 1-800-424-9300

IDENTIFICATION

PRODUCT NAME: ABC DRY CHEMICAL
SYNONYMS: MULTI-PURPOSE DRY CHEMICAL, MAP, (MONO) AMMONIUM PHOSPHATE, ALL-PURPOSE DRY CHEMICAL

HAZARDOUS INGREDIENTS

MATERIAL	CAS NO.	OSHA PEL TWA - mg/m3	ACGIH TLV TWA - mg/m3
Mica	12001-26-2	3 Respirable Dust	3 Respirable Fraction
Kaolin	1332-58-7	10 Total Dust 5 Respirable Fraction	10 (c)

OTHER INGREDIENTS

MATERIAL	CAS NO.	OSHA PEL TWA - mg/m3	ACGIH TLV TWA - mg/m3
Monoammonium Phosphate	7722-76-1	15 Total Dust (a) 5 Respirable Fraction	10 (b)
Ammonium Sulfate	7783-20-2	15 Total Dust (a) 5 Respirable Fraction	10 (b)

(a) Particulate matter not otherwise classified.
(b) Particulate matter not otherwise classified. Total dust containing no asbestos & less than 1% crystalline silica.
(c) Total dust containing no asbestos & less than 1% crystalline silica.

PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT (^{o}F): NA	SPECIFIC GRAVITY (H_2O=1): 0.85	VAPOR PRESSURE (MM HG): NA
PERCENT VOLATILE (%): NA	VAPOR DENSITY (AIR = 1): NA	EVAPORATION RATE: NA
SOLUBILITY IN WATER: Water repellant coated	REACTIVITY IN WATER: None	MELTING POINT(^{o}F): NA
pH: 4.4	APPEARANCE & ODOR: Yellow powder. No characteristic odor.	
FLASH POINT (^{o}F): None	AUTO IGNITION TEMPERATURE (^{o}F): NA	FLAMMABLE LIMITS IN AIR BY VOL: NA
EXTINGUISHER MEDIA: None. This material is an extinguishing agent.		
SPECIAL FIRE FIGHTING PROCEDURES: None	UNUSUAL FIRE AND EXPLOSION HAZARDS: None	

PHYSICAL HAZARDS

STABILITY: Stable	CONDITIONS TO AVOID: NA
INCOMPATIBILITY (MATERIALS TO AVOID): Strong Alkalis, Mg, Sodium Nitrite, Swimming Pool Sanitizers (Inorganic Perchlorates, Sodium Dichloroisocyanurate Dihydrate, Trichloroisocyanuric Acid, Calcium Hypochlorite, Etc.)	
HAZARDOUS DECOMPOSITION PRODUCTS: Ammonia, Carbon Monozide and Oxides of Nitrogen	
HAZARDOUS POLYMERIZATION: Will not occur	CONDITIONS TO AVOID: NA

SAFETY-KLEEN 105 SOLVENT

Synonyms:	Mineral Spirits, Petroleum Naphtha, Stoddard Solvent, Petroleum Distillates.	
Threshold Limit Value (TLV):	100 ppm	
IDLH Level:	Not available	
Physical Description:	Clear green liquid with a characteristic hydrocarbon odor combustible.	
Personal Protection and Sanitation:	Clothing:	Wear appropriate equipment to prevent repeated or prolonged skin contact.
	Goggles:	Wear eye protection to prevent possibility of eye contact.
	Wash:	Promptly when skin becomes wet.
	Change:	N.A.
	Remove:	Immediately remove any clothing that becomes wet to avoid flammability hazard.
Routes of Entry:	Inhalation, ingestion, dermal	
Symptoms:	Eyes, nose, throat irritation, headache, dizziness, nausea, impaired coordination, dermatitis.	
First Aid:	Eyes:	Immediately wash the eyes with large amounts of water for 15 minutes. Get medical attention if pain or irritation persists.
	Skin:	Immediately wash the contaminated skin with soap and water. Repeat. Get medical attention if pain or irritation persists.
	Breath:	Remove to fresh air immediately. Use oxygen or artificial respiration if necessary. Get medical attention if necessary.
	Swallow:	If conscious, drink 4 - 8 ounces of water and get medical attention immediately. Do not induce vomiting.
Target Organs:	Respiratory system, skin, central nervous system.	

TLV -Threshold Limit Value equal to OSHA PEL unless otherwise noted.
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

SAFETY-KLEEN 105 SOLVENT

Synonyms:	Mineral Spirits, Petroleum Naphtha, Stoddard Solvent, Petroleum Distillates.	
Threshold Limit Value (TLV):	100 ppm	
IDLH Level:	Not available	
Physical Description:	Clear green liquid with a characteristic hydrocarbon odor combustible.	
Personal Protection and Sanitation:	Clothing:	Wear appropriate equipment to prevent repeated or prolonged skin contact.
	Goggles:	Wear eye protection to prevent possibility of eye contact.
	Wash:	Promptly when skin becomes wet.
	Change:	N.A.
	Remove:	Immediately remove any clothing that becomes wet to avoid flammability hazard.
Routes of Entry:	Inhalation, ingestion, dermal	
Symptoms:	Eyes, nose, throat irritation, headache, dizziness, nausea, impaired coordination, dermatitis.	
First Aid:	Eyes:	Immediately wash the eyes with large amounts of water for 15 minutes. Get medical attention if pain or irritation persists.
	Skin:	Immediately wash the contaminated skin with soap and water. Repeat. Get medical attention if pain or irritation persists.
	Breath:	Remove to fresh air immediately. Use oxygen or artificial respiration if necessary. Get medical attention if necessary.
	Swallow:	If conscious, drink 4 - 8 ounces of water and get medical attention immediately. Do not induce vomiting.
Target Organs:	Respiratory system, skin, central nervous system.	

TLV -Threshold Limit Value (8-hour time-weighted average unless otherwise indicated)
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

Benzene

Synonyms:	Benzol; Phenyl hydride	
Threshold Limit Value (TLV):	1.0 ppm 5.0 ppm - STEL	
IDLH Level:	2,000 ppm	
Physical Description:	Colorless liquid with an aromatic odor.	
Personal Protection and Sanitation:	Clothing:	To prevent repeated or prolonged skin contact.
	Goggles:	To prevent reasonable probability of eye contact.
	Wash:	Promptly wash with soap when skin becomes contaminated.
	Remove:	Immediately remove any clothing that becomes wet.
Routes of Entry:	Inhalation, Skin absorption, Ingestion, and Skin/eye contact.	
Symptoms:	Irritation of eyes, nose, and respiratory system; giddiness; headache; nausea; staggered gait; fatigue, anorexia, lassitude; dermatitis; bone marrow depression; abdominal pain; carcinogen.	
First Aid:	Eyes:	Irrigate immediately.
	Skin:	Wash promptly with soap and water.
	Breath: Artificial respiration.	
	Swallow:	Get medical attention immediately.
Target Organs:	Blood, central nervous system, skin, bone marrow, eyes, and respiratory system.	

TLV -Threshold Limit Value equal to OSHA PEL unless otherwise noted.
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

1,2-Dichlorobenzene

Synonyms:	Ortho-Dichlorobenzene, o-Dichlorobenzene.	
Threshold Limit Value (TLV):	NA - 50 ppm maximum ceiling value	
IDLH Level:	1000 ppm	
Physical Description:	Colorless to pale-yellow liquid with a pleasant aromatic odor.	
Personal Protection and Sanitation:	Clothing:	Wear appropriate equipment to prevent repeated or prolonged skin contact.
	Goggles:	Wear eye protection to prevent reasonable probability of eye contact.
	Wash:	Promptly when skin becomes wet.
	Change:	N.A.
	Remove:	Immediately remove any non-impervious clothing that becomes contaminated.
Routes of Entry:	Inhalation, ingestion, dermal absorption, dermal contact.	
Symptoms:	Skin, eyes, nose irritation, liver and kidney damage, internal blisters when ingested.	
First Aid:	Eyes:	Immediately wash the eyes with large amounts of water. Get medical attention immediately.
	Skin:	Promptly wash the contaminated skin with soap and water. Get medical attention promptly.
	Breath:	Artificial respiration.
	Swallow:	Get medical attention immediately.
Target Organs:	Kidneys, eyes, skin, liver, central nervous system.	

TLV -Threshold Limit Value equal to OSHA PEL unless otherwise noted.
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

1,4-Dichlorobenzene

Synonyms:	Paradichlorobenzene, dichlorocide, p-Dichlorobenzene.	
Threshold Limit Value (TLV):	75 ppm	
IDLH Level:	1000 ppm	
Physical Description:	Colorless or white crystalline solid with a mothball-like odor.	
Personal Protection and Sanitation:	Clothing:	Wear appropriate equipment to prevent repeated or prolonged skin contact.
	Goggles:	Wear eye protection to prevent reasonable probability of eye contact.
	Wash:	Promptly when skin becomes wet.
	Change:	N.A.
	Remove:	N.A.
Routes of Entry:	Inhalation, ingestion, contact.	
Symptoms:	Eye irritation, nausea, vomiting, jaundice, swelling, weight loss, profuse rhinitis, anorexia, cirrhosis.	
First Aid:	Eyes:	Immediately wash the eyes with large amounts of water. Get medical attention immediately.
	Skin:	Promptly wash the contaminated skin with soap and water. Get medical attention promptly.
	Breath:	Artificial respiration.
	Swallow:	Get medical attention immediately.
Target Organs:	Kidneys, respiratory system, eyes, skin, liver.	

TLV -Threshold Limit Value (8-hour time-weighted average unless otherwise indicated)
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

Tetrachloroethylene

Synonyms:	Perchloroethylene; Tetrachlorethylene; Perc	
Threshold Limit Value (TLV):	100 ppm	
IDLH Level:	500 ppm	
Physical Description:	Colorless liquid with an odor like ether or chloroform.	
Personal Protection and Sanitation:	Clothing:	To prevent repeated or prolonged skin contact.
	Goggles:	To prevent reasonable probability of eye contact.
	Wash:	Immediately when skin becomes contaminated.
	Remove:	Immediately remove any non-impervious clothing that becomes contaminated.
Routes of Entry:	Inhalation, Ingestion, and Skin/eye contact	
Symptoms:	Eyes, nose, and throat irritation; nausea; flushed face and neck; vertigo, dizziness, incoherence; headache; somnolence; erythema; carcinogen.	
First Aid:	Eyes:	Irrigate immediately.
	Skin:	Wash promptly with soap and water.
	Breath:	Artificial respiration.
	Swallow:	Get medical attention immediately.
Target Organs:	Liver, kidneys, eyes, upper respiratory system, and central nervous system.	

TLV -Threshold Limit Value (8-hour time-weighted average unless otherwise indicated)
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

1,1,1-Trichloroethane

Synonyms:	Methyl Chloroform	
Threshold Limit Value (TLV):	350 ppm	
IDLH Level:	1,000 ppm	
Physical Description:	Colorless liquid, with a mild chloroform like odor.	
Personal Protection and Sanitation:	Clothing:	To prevent repeated or prolonged skin contact.
	Goggles:	To prevent reasonable probability of eye contact.
	Wash:	Immediately when skin becomes wet.
	Remove:	Immediately remove any non-impervious clothing that becomes contaminated.
Routes of Entry:	Inhalation, Ingestion, and dermal contact	
Symptoms:	Headache, lassitude, depress CNS, poor equilibrium.	
First Aid:	Eyes:	Irrigate immediately.
	Skin:	Wash promptly with soap and water.
	Breath:	Artificial respiration.
	Swallow:	Get medical attention immediately.
Target Organs:	Respiratory system, central nervous system, skin, and eyes.	

TLV -Threshold Limit Value (8-hour time-weighted average unless otherwise indicated)
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

Ethylbenzene

Synonyms:	Phenylethane, Ethylbenzol	
Threshold Limit Value (TLV):	100 ppm	
IDLH Level:	2,000 ppm	
Physical Description:	Colorless liquid with an aromatic odor.	
Personal Protection and Sanitation:	Clothing:	Wear appropriate equipment to prevent repeated or prolonged skin contact.
	Goggles:	Wear eye protection to prevent reasonable probability of eye contact.
	Wash:	Promptly when skin becomes wet.
	Change:	N.A.
	Remove:	Immediately remove any clothing that becomes wet to avoid flammability hazard.
Routes of Entry:	Inhalation, ingestion.	
Symptoms:	Skin, eyes, nose irritation, headache, dermatitis, narcosis, coma.	
First Aid:	Eyes:	Immediately wash the eyes with large amounts of water. Get medical attention immediately.
	Skin:	Promptly wash the contaminated skin with soap and water. Get medical attention promptly.
	Breath:	Artificial respiration.
	Swallow:	Get medical attention immediately.
Target Organs:	Upper respiratory system, eyes, skin, liver, central nervous system.	

TLV -Threshold Limit Value (8-hour time-weighted average unless otherwise indicated)
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

Toluene

Synonyms:	Toluol, Phenyl Methane, Methylbenzene.	
Threshold Limit Value (TLV):	200 ppm	
IDLH Level:	2,000 ppm	
Physical Description:	Colorless liquid with an aromatic odor.	
Personal Protection and Sanitation:	Clothing:	Wear appropriate equipment to prevent repeated or prolonged skin contact.
	Goggles:	Wear eye protection to prevent reasonable probability of eye contact.
	Wash:	Promptly when skin becomes wet.
	Change:	N.A.
	Remove:	Immediately remove any clothing that becomes wet to avoid flammability hazard.
Routes of Entry:	Inhalation, ingestion, absorption, dermal contact	
Symptoms:	Fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, lacrimation, nervousness, insomnia, dermatitis, photophobia.	
First Aid:	Eyes:	Immediately wash the eyes with large amounts of water. Get medical attention immediately.
	Skin:	Promptly wash the contaminated skin with soap and water. Get medical attention promptly.
	Breath:	Artificial respiration.
	Swallow:	Get medical attention immediately.
Target Organs:	Kidneys, skin, liver, central nervous system.	

TLV -Threshold Limit Value (8-hour time-weighted average unless otherwise indicated)
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

Xylenes

Synonyms:	p-ortho-xylene	
Threshold Limit Value (TLV):	100 ppm	
IDLH Level:	10,000 ppm	
Physical Description:	Colorless liquid with an aromatic odors.	
Personal Protection and Sanitation:	Clothing:	Wear appropriate equipment to prevent repeated or prolonged skin contact.
	Goggles:	Wear eye protection to prevent reasonable probability of eye contact.
	Wash:	Promptly when skin becomes wet.
	Change:	N.A.
	Remove:	Immediately remove any clothing that becomes wet to avoid flammability hazard.
Routes of Entry:	Inhalation, ingestion, absorption, dermal contact	
Symptoms:	Dizziness, excitement, drowsiness, staggering gait, corneal vacuolization, skin, eyes, nose irritation, lack of coordination, nausea, vomiting, dermatitis, abdominal pain.	
First Aid:	Eyes:	Immediately wash the eyes with large amounts of water. Get medical attention immediately.
	Skin:	Promptly wash the contaminated skin with soap and water. Get medical attention promptly.
	Breath:	Artificial respiration.
	Swallow:	Get medical attention immediately.
Target Organs:	Eyes, skin, liver, central nervous system, blood, kidneys, gastrointestinal tract.	

TLV -Threshold Limit Value (8-hour time-weighted average unless otherwise indicated)
Source: NIOSH Pocket Guide to Chemical Hazards, June 1990.

(ATTACHMENT 12)

SECOR

EXCAVATION INSPECTION LOG*

DATE	TIME	EXCAVATION OK/NOT OK FOR ENTRY	COMMENTS	COMPETENT PERSON	SIGNATURE

*Excavation will be inspected before the start of work each day, after each rainfall, or more often if soil/work conditions change.

(ATTACHMENT 13)

SECOR

CONFINED SPACE ENTRY PERMIT

(POST OUTSIDE SPACE)

TO BE COMPLETED BY PROJECT MANAGER

DATE: PROJECT NAME: PROJECT NO: _____

LOCATION OF WORK: _____

HAZARDS IN THIS CONFINED SPACE: _____

DESCRIPTION OF WORK: _____

HAZARDS CREATED BY WORK TO BE DONE: _____

STAND-BY: _____ ENTRY LEADER: _____

EMPLOYEES ASSIGNED: _____

ENTRY DATE: _____ ENTRY TIME: _____ EXIT TIME: _____

OUTSIDE CONTRACTORS WORKING IN AREA: _____

(CIRCLE ONE)

1. Have all employees who will enter this space or act as standby received the following approvals and training:

Yes No a. Medical clearance within the past year.
Yes No b. Training in confined space entry.
Yes No c. Job emergency procedures have been reviewed with all employees involved.
Yes No d. Completed rescue drill for this type confined space.

2. Equipment identified by checks (✓) in boxes will be available at entrance for emergencies. Equipment identified by (X) in boxes will be used by personnel in space.

☐ ☐ 1. 30-min SCBA
☐ ☐ 2. 15-min SCBA
☐ ☐ 3. Other Respirator _____
☐ ☐ 4. 2-way Radios
☐ ☐ 5. Tether - Life lines
☐ ☐ 6. Harness - Safety belt
☐ ☐ 7. Wristlets
☐ ☐ 8. Fall device for tether
☐ ☐ 9. Rolling body board (creeper)
☐ ☐ 10. Ladder
☐ ☐ 11. Ladder extensions
☐ ☐ 12. Barricades for all openings
☐ ☐ 13. Tripod or other lifting device
☐ ☐ 14. Opening device for covers
☐ ☐ 15. Device to lock covers open
☐ ☐ 16. Fresh air blower and hose
☐ ☐ 17. LEL-0_2 monitor-alarm
☐ ☐ 18. Toxic gas colorimetric tubes
☐ ☐ 19. Toxic gas air monitor
☐ ☐ 20. Hard hats
☐ ☐ 21. Safety shoes
☐ ☐ 22. Safety glasses
☐ ☐ 23. Full face shields
☐ ☐ 24. Chemical protective arm covers
☐ ☐ 25. Full chemical protective suit
☐ ☐ 26. Chemical protective gloves
☐ ☐ 27. Chemical protective boots
☐ ☐ 28. Emergency lights/Flashlights
☐ ☐ 29. Fire extinguisher
☐ ☐ 30. Pre-entry H&S Briefing
☐ ☐ 31. Stand-by employee(s)

(ATTACHMENT 13)

CONFINED SPACE ENTRY PERMIT
(POST OUTSIDE SPACE)

Date: Project Name: Project No.:

3. All lines that could discharge contaminants into the space have been/will be blanked off or line disconnected and pumping means locked out and tagged.
   Yes No N/A

4. Space has been/will be cleaned of any toxic residue or atmosphere by_____.
   Yes No N/A

5. Moving machinery has been/will be locked out and immobilized.
   Yes No N/A

6. Entry and exit to the space is provided by_____.
   Yes No N/A

7. Will work to be done in the space introduce contaminants to the space?
   Yes No N/A

8. What is capacity of blowers to be used in cubic feet per minute? _____.

9. Have all affected departments been notified of service interruption?
   Yes No N/A

10. Atmospheric gas tests will be performed by_____.
    Readings:
    Oxygen _____ Flammability % _____ Toxic Gas _____.
    (Not <20% or >22%) (LEL <10%) (<_____ppm)

11. Will continuous monitoring device be used? Yes No Type_____.

12. Calibration date of meters used in items 10 and 11.
    a. _____ b. _____ c. _____

13. Has Corporate Health and Safety been contacted before entry?
    Yes No

14. Emergency communication means: 2-Way ☐ Telephone ☐ Other ☐

I have inspected the space to enter, the safety equipment that will be used, and approve employees' entry into the confined space.

Signed_____
Project Manager

_____
Site Health and Safety Officer

cc: Corporate Health and Safety

APPENDIX C

SAFETY-KLEEN CORP.
DESCRIPTION OF CURRENT CONDITIONS

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

Page

APPENDIX C

SAFETY-KLEEN CORP.
DESCRIPTION OF CURRENT CONDITIONS
FOR RCRA FACILITY INVESTIGATION

1.0 INTRODUCTION

This document describes background information pertinent to the Safety-Kleen facility located at 400 Market Street, Oakland, California (Figure 1). This document includes information regarding facility regulatory status, operations, location, results of previous investigations, and describes interim corrective measures conducted.

1.1 Previous and Ongoing Investigations

1.1.1 Preliminary Assessment (May 1986)

In May 1986, three 8-inch diameter by 20 feet deep soil borings were drilled. Two of the borings were converted to 2-inch diameter groundwater monitoring wells designated as SK-1 and SK-3 (Figure 2). The soil boring which was not converted to a well was designated as SB-1 as shown on Figure 2 (CWC-HDR Consulting Engineers (CWC-HDR), 1986).

Soil samples collected from each of the borings detected the presence of mineral spirits (TPHms). At the location of SK-1 the sample collected from immediately beneath the concrete had 2,300 parts per million (ppm) TPHms and the sample from 10 feet below ground surface (bgs) had 10,000 TPHms detected. The samples from SB-1 collected beneath the concrete, at 5-feet bgs, at 10-feet bgs and 15-feet bgs detected TPHms at 160 ppm, 3,000 ppm, 6,600 ppm and 55 ppm, respectively. The sample collected from beneath the concrete at the location for SK-3 did not detect the presence of TPHms. The samples from SK-3 collected at 5-feet bgs and at 10-feet bgs detected TPHms at 2,400 ppm and 4,900 ppm, respectively. Separate-phase product was noted on the water table in both monitoring wells SK-1 and SK-3 (CWC-HDR, 1986).

1.1.2 Environmental Site Assessment (June and July 1988)

In June 1988, a soil-gas survey was conducted to preliminarily delineate the areal extent of subsurface impact and to assist in the placement of groundwater monitoring wells. Thirteen soil-gas probe holes were located on and around the site to a depth of 6 to 10 feet bgs. Vapor samples were extracted from 6-feet in all the probe holes and analyzed for TPHms. The resultant

mineral spirits vapor plume was determined to be restricted to the parking lot and loading dock areas at the site, and was inferred to extend beneath both adjacent buildings and to the lot located to the north of the return and fill shelter (Groundwater Technology, Inc. (GTI), 1988).

Seven soil samples were extracted from the capillary fringe from peripheral probe holes to verify the results of the soil-gas survey. Analyses of soil samples for volatile organic compounds (VOCs) detected VOCs slightly above the method detection limit in each of the samples. Tetrachloroethene (PCE) was the predominant compound detected with values ranging from 0.79 to 1.6 ppm. No TPHms impact was detected in the peripheral soil samples (GTI, 1988).

Nine monitoring wells (MW-1 through MW-9) were installed on and around the site from July 25 through July 29, 1995 (Figure 2). Thirty-two soil samples were analyzed for TPHms and for VOCs. A total of seven samples had TPHms detected. Soil collected from 5-, 10-, 15- and 20-feet bgs from the boring for MW-7 (Figure 2) had TPHms detected at 520, 2,400, 18 and 15 ppm, respectively. Soil collected from 5-, 10- and 25-feet bgs in the boring for MW-9 had TPHms detected at 240, 52,000 and 25 ppm, respectively (GTI, 1988).

Of the same 32 samples analyzed, only five had VOCs detected above the laboratory reporting limit (0.5 ppm). VOCs were detected in the 5-foot sample from the boring for monitoring well MW-3 and from 5 and 10-feet bgs from the borings for monitoring wells MW-7 and MW-9. The VOCs detected included methylene chloride at a maximum concentration of 1.0 ppm, PCE at a maximum concentration of 1.7 ppm, 1,1,1-trichloroethane (TCA) at a maximum of 3.7 ppm, trans-1,2-dichloroethene (DCE) at a maximum concentration of 1.3 ppm and chlorobenzene at a maximum concentration of 3.1 ppm (GTI, 1988).

Groundwater samples were collected from seven of the monitoring wells. Wells SK-1, SK-3, MW-7 and MW-9 were not sampled due to the presence of separate-phase product. No TPHms was detected in the seven monitoring wells sampled; however, VOCs were detected in each of the seven monitoring wells sampled. VOCs detected included methylene chloride at a maximum concentration of 5.0 parts per billion (ppb), trichloroethene (TCE) at a maximum concentration of 760 ppb, 1,1-dichloroethane (DCA) at a maximum of 1.9 ppb, 1,2-DCA at a maximum concentration of 6.8 ppb, trans-1,2-DCE at a maximum concentration of 32 ppb, chloroform at a maximum concentration of 1.6 ppb and chlorobenzene at a maximum concentration of 1.5 ppb. The groundwater results determined that a VOC plume with relatively high TCE concentrations was encroaching on to the Safety-Kleen property from the north (upgradient). Due to the presence of the encroaching plume, Safety-Kleen determined it was not feasible to initiate a groundwater pumping program without accelerating the TCE plume until a responsible party was identified and had taken responsibility for controlling the plume (GTI, 1988).

A detailed description of the 1988 assessment activities is presented in the September 9, 1988 Interim Update Report, Safety-Kleen Facility, 404 Market Street, Oakland, California, included in Appendix H.

1.1.3 Environmental Site Assessment (August and September 1989)

Four additional monitoring wells were installed on and around the site from August 18 through September 12, 1989. Monitoring wells MW-10, MW-11 and MW-12 were installed to assess the periphery of the VOC plume and monitoring well MW-13 was installed with a discrete screen interval at the base of the uppermost aquifer to assess the vertical extent of the dissolved VOC plume. No VOCs or TPHms were detected in the eight soil samples collected for analysis from the drilling for the four additional monitoring wells. The wells were placed on a monthly groundwater sampling program (GTI, June 1990).

A detailed description of the August and September 1989 assessment activities is presented in the June 1990 Update Report, Additional Assessment, 404 Market Street, Oakland, California, included in Appendix H.

1.1.3.1 Soil-Vent Feasibility Test

A soil-vent feasibility test was conducted on January 18, 1990 to evaluate the applicability of using soil venting as a soil remediation technique. The results of the test indicated that vertical venting point could achieve a horizontal radius of influence of approximately 35 feet. The test also indicated that mineral spirits vapors could be withdrawn from the vadose zone using standard vacuum-extraction techniques (GTI, June 1990). A detailed description of the soil-vent feasibility test is included in Appendix E of the June 1990 Update Report, Additional Assessment, 404 Market Street, Oakland, California, included in Appendix H.

1.1.4 Underground Storage Tank Removal Program (1990)

From May 31 through July 5, 1990, the three single-walled USTs (two 6,000-gallon and one 10,000-gallon) were removed and replaced with two 12,000-gallon double-walled USTs. During the removal, the tank excavation was completed to approximately 13-feet bgs. Groundwater was encountered at approximately 8-feet bgs, requiring dewatering during the installation of the new USTs. Groundwater and product that accumulated in the excavation were pumped into storage tanks pending removal of the product using a skimmer. Approximately 100 gallons of product

were removed and sent to a Safety-Kleen Recycle Center. Approximately 34,000 gallons of water were treated and discharged in accordance with an East Bay Municipal District (EBMUD) permit (GTI, September 1990).

The two 6,000-gallon USTs and the 10,000-gallon UST were removed from the excavation and transported to H&H Environmental Services in San Francisco, California for disposal. Eight soil samples were collected from the sidewalls and bottom of the tank excavation. The samples were analyzed for TPHms by modified EPA Method 8015, BTEX by EPA Method 8020 and for VOCs by EPA Method 8240. TPHms were detected in each of the samples to a maximum concentration of 30,000 ppm. A detailed description of the analytical results is presented in the Report of Underground Storage Tank Replacement Activities At The Safety-Kleen Oakland Service Center, Oakland, California, dated September 1990. Excavated soil totaling 984 tons were transported to Port Costa Materials, Inc. in Port Costa, California for thermal destruction of volatile hydrocarbons in a rotary kiln (GTI, September 1990).

Subsequent to excavation of the tank pit, two new 12,000-gallon double-walled Glasteel™ USTs were installed. In conjunction with the UST installation, soil vapor extraction (SVE) system piping and a product recovery well were installed in the excavation. The SVE system piping and recovery well were installed in accordance with the Work Plan For Soil-Vent System Piping dated June 15, 1990 (Appendix H). The Work Plan was submitted to the Department of Health Services (currently the DTSC) and the California Regional Water Quality Control Board, San Francisco Bay Region for review. Figure 7 presents the location of the recovery well and soil-vent system layout in schematic.

After completion of the UST installations and SVE system and recovery well installations, the excavation was backfilled and resurfaced with concrete. A detailed description of the activities is provided in the Report of Underground Storage Tank Replacement Activities At The Safety-Kleen Oakland Service Center, Oakland, California, dated September 1990. A copy of the report is included in Appendix H.

1.1.5 Interim Remedial Measures

In January, 1993, a product skimming pump was placed in the recovery well. Mineral spirits recovered from well RW-1 is pumped directly to the waste mineral spirits UST. Through May 1995, the skimming pump has removed approximately 125.5 gallons of mineral spirits (*SECOR* International Incorporated (*SECOR*), 1995).

In June 1993, the SVE system operation was initiated. The SVE system consisted of the seven horizontal vapor extraction lines and a vapor treatment system consisting of a Padre™ regenerative polymer adsorption system followed by a carbon polish. A detailed description of the SVE system is provided in the Quarterly Groundwater Monitoring and Soil Vapor Extraction Report dated October, 1993. The system has removed approximately 1798 pounds of mineral spirits from June 1, 1993 through November 24, 1994. The system has not operated since November 24, 1994, pending modification to a carbon adsorption system (*SECOR*, 1995).

2.0 FACILITY BACKGROUND

2.1 Facility Location

The Safety-Kleen Oakland facility is located at 400 Market Street, Alameda County, California (Figure 1). The facility contains an approximately 8,900 square foot office and warehouse building, two double-walled 12,000-gallon USTs and a return and fill shelter. The tanks and return and fill shelter are located outside, on the east side, between the Safety-Kleen office/warehouse building and a neighboring business (Figure 3).

The facility is located in a general commercial and light industrial zoned area of Oakland. The City of Oakland zoning designation is M-30.

2.2 Description of Facility Ownership and Operations

Safety-Kleen started operations at the facility on February 1, 1975, at which time Safety-Kleen leased a portion of the facility from Bedford Properties. The portion of the facility leased by Safety-Kleen was at the address of 404 Market Street. On May 9, 1990, Safety-Kleen purchased the building and property from Bedford Properties. At that time the entire facility address became 400 Market Street. Safety-Kleen Corp. is a Wisconsin corporation with corporate offices located at: 1000 North Randall Road, Elgin, Illinois 60123-7857. Safety-Kleen, as the owner and operator, installed its own operating equipment and structures including the return and fill shelter, drum storage areas, and USTs with associated equipment.

2.2.1 Facility Operations

The facility is a branch of Safety-Kleen Corp.'s chemical distribution chain. Most of its customers are small quantity generators engaged in the auto repair and industrial maintenance business. Used chemicals including spent mineral spirits, spent immersion cleaners, dry cleaning wastes, and spent antifreeze are collected from customers and stored at the facility while awaiting shipment to recycling centers. These used chemicals are hazardous waste due to their toxic and/or ignitable characteristics.

The facility includes offices and a warehouse for the storage of products and wastes as well as an outdoor loading area which contains two USTs (Figure 3). The facility contains two permitted drum storage areas (SWMU Nol. 1). The West Drum Storage Area is approximately 15 feet by 22 feet and the East Drum Storage Area is approximately 22 feet by 22 feet (Figure 3). The maximum volume stored in the West Drum Storage Area is 5184 gallons. The maximum volume

stored in the East Drum Storage Area is 3070 gallons. These volumes include all hazardous materials (clean or recycled immersion cleaner) and transfer station wastes stored in each respective area.

The return and fill shelter and two USTs are located outside the Service Center building (Figure 3). The USTs are a 12,000-gallon double-walled spent mineral spirits solvent tank (SWMU No. 2) and a 12,000-gallon double-walled mineral spirits product tank (AOC No. 1).

The waste streams at the facility have changed over time. Initially, mineral spirits and immersion cleaner (the old formula) were handled. The old formula immersion cleaner was a special blend of chlorinated and water-phase solvents. After the spring of 1990, Safety-Kleen reformulated their immersion cleaner to contain non-halogenated hydrocarbon solvent, methyl 1,2-pyrrolidine, dipropylene glycol and monoethanolamine (new formula). Safety-Kleen leases these solvents (mineral spirits, new immersion cleaner) to a variety of businesses which engage in services such as automotive repair and industrial maintenance. Safety-Kleen also services the dry cleaning industry.

Because Safety-Kleen only leases these solvents to other companies, the solvents remain the property of Safety-Kleen. When the solvents become dirty and unusable, Safety-Kleen service representatives pick up the spent solvent and replace it with new solvent. The used solvents are taken back to the Oakland facility for temporary storage. The used solvents are then picked up periodically and transported to a Safety-Kleen Recycle Center for reclamation.

2.2.2 Waste Management Operations

The Service Center operations outside the building include unloading drums of spent mineral spirits solvent onto the loading dock within the return and fill shelter and refilling cleaned drums with product mineral spirits. The drums containing spent solvent are opened and emptied into the drum washers which have filter screens at the bottom. The sediment is periodically removed, drummed and shipped to a Safety-Kleen Recycle Center. The spent solvent drains from the drum washer through underground piping to the 12,000-gallon spent mineral spirits solvent tank. The empty drums are cleaned in a drum washer, filled with product mineral spirits solvent from a dispenser and then reloaded onto the trucks. The entire operation is conducted at the loading dock within the return and fill shelter. Secondary containment beneath the loading dock consists of a steel catchment basin beneath the elevated loading dock floor and a bermed concrete floor. The spent solvent UST is emptied by a tanker truck approximately once per week and the solvent is transported to a Safety-Kleen Recycle Center.

Drums of other wastes are unloaded from the trucks and stored in the hazardous waste drum storage areas. All drum storage areas are bermed and have collection trenches to contain any spilled materials. The facility receives and stores drums of waste pending transport to Safety-Kleen Recycle Centers in California and/or Texas.

2.2.3 Permitting

Safety-Kleen began operating at the Oakland facility on February 1, 1975. An original Part A Application was submitted to the Department of Toxic Substances Control (DTSC) on November 18, 1980. An Interim Status Document (ISD) was issued by the California Department of Health Services (DHS) for the Oakland facility on December 11, 1981. The DHS called in Safety-Kleen's Part B Permit application on October 29, 1985. Safety-Kleen subsequently submitted a Part B application on January 29, 1986. On June 26, 1986, Safety-Kleen requested a modification to the Part A application to allow for the acceptance of perchloroethylene (PCE) wastes and other dry cleaning wastes. The DHS approved Safety-Kleen's request to modify the Part A application on March 17, 1987. On September 19, 1989, the DHS requested Safety-Kleen to submit an updated Part B application. Safety-Kleen operates under the current Part B Permit which became effective on March 9, 1992.

2.2.4 RCRA Permitted Units

The permitted hazardous waste management units at the facility are the two drum storage areas (SWMU No. 1), the 12,000-gallon underground waste mineral spirits UST (SWMU No. 2), and the return and fill shelter (SWMU No. 3). The following sections describe the permitted units.

2.2.4.1 Drum Storage Areas (SWMU No. 1)

The drum storage areas are located at the rear of the warehouse building (Figure 3). The west drum storage area is approximately 15 feet by 22 feet (approximately 330 ft^2). The east drum storage area is approximately 22 feet by 22 feet (approximately 484 ft^2). The floor of the drum storage ares are made of steel-reinforced concrete and are sealed with an epoxy coating. The number and types of containers held in each area may vary, but the maximum volume capacity of the west area is 5184 gallons and of the east storage area is 3070 gallons. Secondary containment is provided by a 6-inch wide by 4-inch high steel-reinforced curb with three trenches each 12 feet long, 2 feet wide, and 2.5 feet deep, having a capacity of approximately 448 gallons. The west drum storage area has two trenches while the east drum storage area has one trench. The drum storage areas were considered one SWMU because they are adjacent to each other.

Dates of Operation: The drum storage areas became active in 1975. The area is still active.

Wastes Managed: Wastes stored in the east storage area are used immersion cleaner and mineral spirits dumpster mud. Dry cleaning wastes are stored in the west storage area. Safety-Kleen also uses this area as a transfer station and stores wastes such as lacquer thinner, waste paint and inks, 1,1,1-TCA and ethylene glycol for up to 144 hours in the east storage area.

2.2.4.2 Underground Storage Tank (SWMU No. 2)

The 12,000-gallon double-walled waste mineral spirits UST is located outside the northeast end of the warehouse (Figure 3). Secondary containment is provided by the outer wall. The tank is cylindrical in shape. The outer tank measures 32.5 feet long with a diameter of 8.5 feet. The inner tank measures 32 feet long with an 8 foot diameter. A leak detection system is installed in the interstice between the tanks. The tank is also equipped with a high level alarm and an automatic feed cutoff system which is set at 95 percent of the tank volume (11,400 gallons). The tank is supported on at least one foot of bedding sand and is anchored by being bolted to concrete deadman.

Dates of Operation: Prior to June 1990, there were two 6,000-gallon USTs in the same location as the current waste UST. The two tanks were installed in February 1975. The current waste mineral spirits UST was installed in June 1990.

Wastes Managed: Used mineral spirits. The waste mineral spirits primarily consists of petroleum hydrocarbon fractions with boiling points between 310°F and 400°F. Impurities such as light hydrocarbons and chlorinated hydrocarbons usually make up less than one percent of the total volume of the waste mineral spirits.

2.2.4.3 Return and Fill Shelter (SWMU No. 3)

The return and fill shelter is located outside on the northeast corner of the building, adjacent to the north end of the USTs (Figure 3). The return and fill shelter houses two drum washers. The drum washers are the receptacles for the waste mineral spirits when the used solvent is emptied from the drums to the waste mineral spirits UST. The drum washers filter coarse solids that may be present in the waste solvent. The sediment (dumpster mud) is periodically removed with a shovel and drummed, prior to shipment to a recycle center. The liquid solvent flows via underground piping to the waste mineral spirits UST. The drum is placed on the drum washer and when activated, a stream of clean mineral spirits is sprayed and brushes are rotated to remove any remaining waste in the drum.

Dates of Operation: The return and fill area became active in February 1975. The current drum washing system was installed in June 1990.

Wastes Managed: A sludge accumulates at the bottom of the drum washer. The sludge or dumpster mud normally contains very little free liquid and is in a semi-solid form. The mineral spirits dumpster mud contains soils, oil, grease, water, small amounts of mineral spirits, and other solids which may have been picked up during customer's degreasing operations. The mud is removed from the dumpster with a shovel and placed into 16-gallon drums and shipped to a Safety-Kleen Recycle Center.

2.2.5 Non-RCRA Permitted Unit

The following area was identified during the RFA as requiring investigation during the RFI. This unit is not a permitted unit under the facility's Part B Permit.

2.2.5.1 Underground Storage Tank (AOC No. 1)

The 12,000-gallon mineral spirits product UST is located adjacent to the east side of the waste mineral spirits UST in the same tank cavity (Figure 3). The tank is connected to hoses in the return and fill shelter. The mineral spirits product are pumped into 16- or 30-gallon drums for distribution to Safety-Kleen customers. Secondary containment is provided by the outer wall. The tank is cylindrical in shape. The outer tank measures 32.5 feet long with a diameter of 8.5 feet. The inner tank measures 32 feet long with an 8 foot diameter. A leak detection system is installed in the interstice between the tanks.

Dates of Operation: Prior to June 1990, there was a 10,000-gallon UST in the same location as the current product UST. The 10,000-gallon tank was installed in February 1975. The current mineral spirits UST was installed in June 1990.

Product Managed: The product managed in this tank is Safety-Kleen F105 Solvent (mineral spirits).

2.3 Local Demography and Land Usage

The facility is located at an approximate elevation of 9 feet above mean sea level (MSL) in northern California in the City of Oakland, Alameda County, California. The facility is located approximately 6200 feet west of Lake Merritt and 2200 feet north of the Oakland Inner Harbor Channel which is connected to San Francisco Bay (Figure 1). The facility is bounded to the north by a Bay Area Rapid

Transit (BART) Rail and Fifth Street, to the west by Market Street, to the south by Fourth Street and to the east by a neighboring business and Brush Street (Figure 2). The site is zoned in a light industrial and commercial area of Oakland.

2.4 Physiographic Setting

The Safety-Kleen facility is located in the eastern San Francisco Bay area, on the East Bay Plain, between two mountain blocks of the Central Coast Range. The Berkeley Hills (East Bay Hills), a branch of the Diablo Range, lie to the east. The San Francisco Peninsula, the northernmost extension of the Santa Cruz Mountains, lies to the west. The San Andreas fault zone is west of San Francisco Bay while the Hayward and Calaveras fault zones are to the east (Graef et al., 1990). The land surface at the facility is approximately 9 feet above MSL.

2.4.1 Topography

The land occupied by the Safety-Kleen facility is essentially a flat plane which slopes slightly to the southeast. The maximum difference in elevation across the site is approximately 1.5 feet.

2.4.2 Surface Water Hydrology

The Safety-Kleen facility is located approximately 6200 feet west of Lake Merritt and 2200 feet north of the Oakland Inner Harbor Channel which is connected to San Francisco Bay (Figure 1). There are no other nearby bodies of surface water.

Drainage from the active portion of the facility is discharged through a storm drain located in the driveway entrance from Fourth Street (Figure 2). The storm drain system discharges directly to the Oakland Inner Harbor Channel. The Flood Insurance Rate Map, Panel 15 of 45, indicates that the Safety-Kleen facility is outside of the 100-year flood plain (Cal-EPA, 1990).

2.4.3 Climate

The normal annual precipitation for the area is 18.03 inches. The coldest month of the year is January with an average daily high temperature of 55°F and an average low temperature of 45°F. The warmest month of the year is September with an average daily high temperature of 70°F and an average low temperature of 58°F. The average yearly high temperature is 65°F and average yearly low temperature is 53°F. The prevailing wind direction is from the west to northwest (Cal EPA-DTSC, 1990)

2.4.4 Geology

2.4.4.1 Regional Geology

The geologic formations underlying San Francisco Bay are divided into two distinct units that differ greatly in age and rock type. The bedrock underlying most of the San Francisco Bay is composed of Jurassic and Cretaceous sandstone, siltstone, chert, melange and utramafic rocks of the Franciscan Complex. Total thickness of the Franciscan Complex is unknown. Beneath the site, Pleistocene age continental and marine sediments of the Alameda Formation (older alluvium) unconformably overlay the Franciscan bedrock and are composed of gravel, sand, silt and clay which is locally organic rich and fossiliferous. Consolidation of the sediments increases with depth with the maximum known thickness of approximately 1500 feet (Cal-EPA, 1990).

The Pleistocene-Quaternary Age Merritt Sand overlies the Alameda Formation (older alluvium) and consists of fine-grained sand and firm, clayey sand that contains lenses of sandy clay and clay. One to two feet of loose, sandy silts covers the surface of the sand. These sediments were deposited by wind and water from beach and near-shore deposits. Maximum known thickness of the Merritt Sand is approximately 65 feet (Cal-EPA, 1990).

No active faults (displacement in the Holocene Epoch) are located within 3000 feet. The Hayward fault, the nearest fault having displacement during the Holocene Epoch is over four miles from the Safety-Kleen facility. The site is not located within an Alquist-Priolo special studies zone (Graef et al., 1990).

2.4.4.2 Site Geology

The subsurface geology as observed in the borings drilled in and around the site show the Merritt sands are present beneath the site. The Merritt sands beneath the site consist of interbedded sandy silt and sandy clayey silt (GTI, June 1990). Figures 4 through 6 present generalized geologic cross sections for the site. See Appendix H of this Work Plan for the Update Report with copies of the drill logs.

2.4.5 Hydrogeology

2.4.5.1 Regional Hydrogeology

The older alluvium is the major groundwater reservoir along the East Bay Plain. In the Oakland area, the older alluvium has not been subdivided into aquifer units like it has been in San Lorenzo and further south along the East Bay Plain. Groundwater in the older alluvium is present under confined conditions in a series of permeable sand and gravel bed separated by low permeability clay and silt beds. Recharge to the aquifers in the older alluvium occurs principally as seepage from streams along the west side of the Hayward fault. The overall movement of groundwater in the older alluvium is westward toward San Francisco Bay, but locally the movement may be altered by pumping from wells. Some upward movement of groundwater from the confined aquifers toward the overlying sediment also occurs under natural conditions. The vertical flow direction has now reversed due to pumping over the past sixty years (Graef et al., 1990).

2.4.5.2 Site Hydrogeology

In the Oakland area, the permeable Merritt Sand is considered only a secondary source of groundwater due to its limited areal extent and thickness. The unconfined Merritt Sand aquifer is recharged in areas of surface exposure by precipitation, seepage from streams, lawn and garden watering, excessive irrigation water, and leaky sewers (Graef et al., 1990).

Groundwater in the monitoring wells in the site and surrounding area intercept groundwater at approximately 8 feet bgs. Seasonal fluctuations can cause the depth to groundwater to fluctuate from approximately 7 to 13 feet bgs. A southerly groundwater flow direction has consistently been calculated beneath the site (GTI, June 1990).

2.4.6 Groundwater Usage and Quality

Most of the water used for domestic purposes by the cities in Alameda County is imported surface water. Groundwater is used as a domestic water supply by a few small water purveyors and by unincorporated areas of the county. Groundwater is used in the East Bay Plain mainly for irrigation. There is also some industrial use of groundwater (Graef et al., 1990).

3.0 NATURE AND EXTENT OF CONTAMINATION

3.1 Contaminant Sources

Based on the previous investigation events, the possible sources of contamination at the facility include the former USTs and the former return and fill shelter. These units were replaced in 1990, greatly reducing the likelihood for additional sources of subsurface impact. The new USTs and return and fill shelter were located in the same locations as the previous units (Figure 3). Additionally, a VOC plume has migrated from upgradient (north) of the site. See Appendix H for copies of the reports which document the presence of subsurface impacts and the corrective measures which have been implemented.

3.2 Migration Pathways

Mineral spirits and associated VOC impacts appear to have impacted the shallow soil in the vicinity of the USTs and return and fill shelter. Additionally, impacts have either directly impacted groundwater from the former USTs or have migrated from the vadose zone to the groundwater. Separate phase product on the groundwater appears to be relatively static in the vicinity of the USTs and is present only in monitoring well MW-9 and extraction well RW-1 (Figure 2). Dissolved VOC impacts from the Safety-Kleen facility are present in monitoring well MW-8, located in the entrance on Fourth Street. VOC impacts are present in monitoring wells MW-3 and MW-12, located downgradient from the Safety-Kleen facility; however, these impacts may be associated with the upgradient VOC plume detected in monitoring wells MW-4, MW-5, MW-6, MW-10 (prior to abandonment) and MW-11 (Figure 2).

3.3 Facility Contamination

The extent of contamination at the facility is well defined. Soil samples collected in 1990 during the UST replacement and during the drilling of soil borings for monitoring well installations determined the soil impact is present immediately adjacent to the UST pit and has migrated along the capillary fringe as far as monitoring well MW-8. Groundwater impacts related to past Safety-Kleen operations appear to extend to monitoring well MW-8 with peripheral impacts present due to migration of an upgradient VOC plume. The results of previous facility investigations are presented in the reports included in Appendix H.

4.0 IMPLEMENTATION OF INTERIM CORRECTIVE MEASURES

4.1 Summary of Response Actions

In January, 1993, a product skimming pump was placed in the recovery well. Mineral spirits recovered from well RW-1 is pumped directly to the waste mineral spirits UST. Through May 1995, the skimming pump has removed approximately 125.5 gallons of mineral spirits (*SECOR* International Incorporated (*SECOR*), 1995).

In June 1993, the SVE system operation was initiated. The SVE system consists of the seven horizontal vapor extraction lines and a vapor treatment system. Initially the vapor abatement system consisted of a Padre™ regenerative polymer adsorption system followed by a carbon polish. A detailed description of the SVE system is provided in the Quarterly Groundwater Monitoring and Soil Vapor Extraction Report dated October, 1993. The system has removed approximately 1798 pounds of mineral spirits from June 1, 1993 through November 24, 1994. The system has not operated since November 24, 1994, pending modification to a carbon adsorption system (*SECOR*, 1995).

4.2 Closure Plan, Contingent Closure Plan, and Post-Closure Plan

The Closure Plan for the facility (Part 9, Part B Permit) includes the closure of the two waste mineral spirits USTs, drum storage areas and the return and fill shelter containing two drum washers. It is not known when closure of these units will occur. No Partial Closure of these units is currently expected.

When closure is initiated, Safety-Kleen intends to achieve/demonstrate clean-closure of the hazardous waste management units at this facility. The existing units and all associated ancillary equipment will be decontaminated and removed. In addition, remedial actions will be conducted to decontaminate the subsurface soil and groundwater to the extent necessary to protect human health and the environment.

Safety-Kleen may request an extension of the 180 day closure period so that the remedial actions can be implemented, if required. If the monitoring programs conducted in conjunction with the remedial action plan indicate significant progress toward clean-closure, but that a longer remediation period is necessary, Safety-Kleen may request further extension of the closure period. If the monitoring programs indicate that the clean-closure objectives cannot be achieved within a reasonable time frame, the contingent closure and post-closure procedures will be implemented.

Contingent Closure Plan

If clean-closure cannot be achieved within the negotiated closure period, Safety-Kleen will complete closure of the UST area under the regulations applicable to landfills (40 CFR 264.310). The following is a summary of the contingent closure steps:

1. Continue implementation of the remedial action plan;
2. assess conditions of final cover;
3. prepare survey plat; and
4. submit closure certificate.

Contingent Post-Closure Plan

The contingent post-closure plan will be implemented in the event it is necessary to close the UST area as a landfill. The post-closure plan descries the activities to be conducted by Safety-Kleen during the up-to-30 year period following closure.

Safety-Kleen may continue to conduct the remedial actions during the post-closure period. When the site monitoring data indicate that impacts have been reduced below levels which protect human health and the environment, Safety-Kleen may request DTSC to shorten the post-closure period and discontinue post-closure care.

APPENDIX D

Standardized
SAFETY-KLEEN CORP.
PROJECT MANAGEMENT PLAN

APPENDIX D

Standardized
SAFETY-KLEEN CORP.
PROJECT MANAGEMENT PLAN
for RCRA Facility Investigations

PROJECT ORGANIZATION AND RESPONSIBILITY

This section outlines the management responsibilities of project personnel and lines of authority and communication. This hierarchy will be used so that all team members are familiar with their expected roles in completing a specific assignment. The management responsibilities are described below:

Department of Toxic Substance Control (DTSC) Project Managers: DTSC Project Managers have the overall agency responsibility for administration of the RCRA Facility Investigation (RFI).

Safety-Kleen (S-K) Project Manager: The Safety-Kleen Project Manager will hold overall responsibility for contact with the United States Environmental Protection Agency (USEPA), DTSC, and the Consultant Project Managers. The S-K Project Manager has the overall responsibility for making final decisions on the scope of work. The S-K Project Manager also holds the responsibility for coordinating Consultant Project Manager and Safety-Kleen facility operations.

Consultant Project Manager: The Consultant Project Manager will hold overall responsibility for technical and quality-related project matters. Final decisions on recommendations, personnel assignments, and the submission of final reports to S-K are made by the Project Manager. All of the documents prepared by the consultant will be subjected to QA/QC procedures and be reviewed and signed by the Project Manager and the Project Officer.

Consultant Project Officer: The Consultant Project Officer has overall responsibility for verifying that the project meets objectives and standards as provided in the approved Work Plan.

Consultant Field Team Leader: The Consultant Field Team Leader has the responsibility for leading and coordinating all of the activities undertaken during the field investigation. In addition, the Field Team Leader will be responsible for coordination and supervision of field staff. The Consultant Field Team Leader reports to the Consultant Project Manager.

Consultant Field Team: The consultant will provide field staff for the project. The field staff will collect samples, operate field equipment and perform other field activities. The field staff will report to and work under the direction of the Field Team Leader.

Consultant Technical Staff: The technical staff used on this project will be utilized to gather and analyze data and to prepare various reports. Technical staff will include engineers, geologists, hydrogeologists, toxicologists and other specialists, as needed. The technical staff report to the Consultant Project Manager.

Consultant Selection: The Consultant will be selected for this project upon receipt of DTSC approval of the Phase I RFI Work Plan.

Names, addresses, and phone numbers of key site-specific personnel are provided in Attachment A.

ATTACHMENT A

ADDRESS LIST
KEY PROJECT PERSONNEL

DTSC Project Manager:

Name: _____

Address: _____

_____

Phone #: _____

Safety-Kleen Project Manager:

Name: Chip Prokop, Senior Project Manager - Remediation

Address: 16540 Southeast 130th Street

Clackamas, Oregon 97015

Phone #: (503) 655-2769

Consultant Project Manager:

Name: _____

Address: _____

_____

Phone #: _____

APPENDIX E

Standardized
SAFETY-KLEEN CORP.
DATA MANAGEMENT PLAN

CONTENTS

APPENDIX E

Standardized
SAFETY-KLEEN CORP.
DATA MANAGEMENT PLAN
FOR RCRA FACILITY INVESTIGATIONS

1.0 INTRODUCTION

This Data Management Plan (DMP) describes the procedures developed to provide operating guidelines for project staff in order to satisfy data management requirements for the project. The following sections describe the procedures which will be implemented as part of the DMP.

2.0 DATA MANAGEMENT PROCEDURES AND GUIDELINES

The data management system for the RCRA Facility Investigation (RFI) is designed to control, inventory, and track investigation data and document results. After data are generated in the field and laboratory, it will be managed in a manner devised to preserve its integrity. Data will be maintained using hard copy (field logs, laboratory reports) and computer files. Field log books, chain-of-custody records, laboratory reports, photos, maps, correspondence, and reports will be maintained as part of the data record. The data management procedures outlined in this section are intended to provide for proper inventory, control, storage, and retrieval of data and information collected during the investigation. The various formats to be used to present the raw data and conclusions of the investigation are also discussed in this management plan.

2.1 RECORDS CONTROL

Incoming investigation-related documents will be stamped with the date received and filed. If distribution is required, the appropriate copies will be made and distributed to project personnel. A listing of personnel intended to receive copies will be attached to the original document.

Information generated from field activities will be documented on the appropriate forms presented throughout the various sections of this RFI Work Plan. These include the following:

- Soil/coring logs;
- Well construction logs;
- Drilling and sampling daily checklists; and
- Copies of field notes.

Analytical documentation received from the laboratory will be retained and filed. Laboratory documentation will be maintained for purposes of validating the data collected during the investigation.

2.2 DOCUMENT FILING AND ACCESS

Project files containing investigation-related data, transmittals, and reports generated during the investigation will be maintained in a central location according to the procedures outlined in this section. Access to the project files will be monitored and limited to project personnel. Where possible, a copy of all final reports will be maintained at the subject facility.

A central file will be maintained in a designated area and under custody of the Consultant Project Manager, listed in the Project Management Plan (PMP). As soon as practical, incoming originals of correspondence, documents, and records will be placed in the central project file. The file shall include analytical data, logs, field notes, photographs, QA/QC audit reports, progress reports, and other relevant records generated. Unless otherwise specified, the analytical laboratories will be required to maintain laboratory-generated documents for a period of three years after completion of the project.

2.3 COMPUTER DATA STORAGE

During the implementation of this investigation, various types of information will be compiled. Data related to the investigation will be stored in a computer database. This database will contain data collected during the RFI. Well construction information from monitoring wells installed during the RFI, together with new water-level data will be entered into te database as applicable. All information will be stored on double-sided, high density diskettes. The software format of the data will be indicated on the diskette.

When required, data entry will be performed by designated project personnel. Computerized databases will be checked against the original data (maintained in the project file) to determine if it was entered correctly. Data entered into the database system will be drawn from existing files, field records, as well as laboratory analysis sheets. Data records will contain the following types of information:

- Unique sample or field measurement codes;
- Sampling or field measurement location and sample or measurement type;
- Sampling or field measurement raw data;
- Laboratory analysis ID number (if appropriate);
- Property or component measured (including store code if applicable); and,
- Result of analysis (e.g., concentration).

2.4 DATA REDUCTION METHODS

Using the database-management system, data will be presented to provide integrated and detailed organization of the existing information. Data will be categorized and compiled according to information type to assist in defining existing site conditions. Information types may include: (1) geologic characterization, (2) geotechnical analysis, and (3) soil quality analysis.

The reduced data will be presented in either tabular or graphical formats. The following types of data will be presented in tabular formats:

- Unsorted (raw) data;
- Results for each medium, or for each constituent monitored; and
- Summary data.

Other types of data that might be presented in an appropriate graphical format (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.) include:

- Sampling locations;
- Boundaries or sampling areas;
- Constituent levels, averages, and maxima;
- Geographical extent of impacts;
- Changes in concentration in relation to distance from the source, time, depth, or other parameters, and
- Features affecting intramedia transport and potential receptors.

APPENDIX F

Standardized
SAFETY-KLEEN CORP.
COMMUNITY RELATIONS PLAN

TABLE OF CONTENTS

ATTACHMENTS

APPENDIX F

Standardized
SAFETY-KLEEN CORP.
COMMUNITY RELATIONS PLAN
for RCRA Facility Investigations

1.0 INTRODUCTION

This section describes how the public will be informed of the Corrective Action Program activities conducted at the subject California Safety-Kleen facility.

The RCRA Facility Investigation (RFI) is being conducted in accordance with requirements specified in the facility's Hazardous Waste Facility Part B Permit (Permit) or at the request of the Department of Toxic Substance Control (DTSC). Federal and State regulations require that environmental investigations be conducted at all facilities that treat, store, or dispose of hazardous waste when there is a potential for a contaminant release to the environment. The Corrective Action Program provides for the protection of human health and the environment from hazardous wastes or hazardous waste constituents that may have been released to the environment. If corrective action measures are indicated, additional public participation activities (such as community interviews, additional public meetings and fact sheets) may be required.

1.1 RESPONSE TO INQUIRIES AND REPOSITORY

Inquiries from the public regarding RCRA corrective action at the facility will be directed to Mr. Chip Prokop, Senior Project Manager in Safety-Kleen's Remediation Department. Inquiries can be made to Mr. Prokop by mail at 16540 S.E. 130th Street, Clackamas, Oregon 97015 or by telephone at (503) 655-2769. Inquiries to the DTSC can be made to the Public Participation Branch at 245 West Broadway, Suite 425, Long Beach, California 90802 or by telephone at (310) 590-4868. The DTSCs site-specific Public Relations Specialist is listed in Attachment A.

Safety-Kleen and the DTSC will maintain a record of incoming calls and copies of all written correspondence received. Safety-Kleen will forward this information on a quarterly basis to the DTSC contact listed above, unless directed by the DTSC to do otherwise.

The community surrounding the facility will have access to the RCRA Corrective Action Program documents. These documents will be located in an information repository at the facility and at the local location listed in Attachment A. The repository will include the following documents:

- Haz Waste Facility Permit or Corrective Action Order
- RFA Report
- RFI Work Plan
- Previous RFI Report(s), if applicable

Documents will be added to the repository promptly after they are approved by the DTSC.

1.2 PUBLIC NOTICE

Upon approval by DTSC of this RFI Work Plan, the workplan and subsequent reports will be placed in the repository for public review. As necessary, as determined by the community interest in the corrective action activities at the site, a public notice display ad may be published in the local news section of a newspaper with general circulation in the area. The newspaper selected for the public notice will provide an opportunity for potentially concerned parties to become aware of Corrective Action Program activities at the facility. The public notice will identify the following:

- site location;
- description of the project;
- document repository location;
- repository hours of operation;
- documents that are available for review at the time of the notice;
- the names and phone numbers of contact persons at the repository;
- the names and phone numbers of DTSC contact persons; and,
- the names and phone numbers of facility contact persons (if different than above).

A letter to the community may also be prepared and distributed to the DTSC-maintained project mailing list. This letter will briefly elaborate on the information contained in the public notice. At the conclusion of the RFI, in conjunction with the DTSC, public comments will be solicited and considered during the evaluation and selection of corrective measures for the facility, if necessary.

1.3 FACT SHEET AND PUBLIC MEETING

The RFI findings will be summarized in a RFI Results Fact Sheet. This fact sheet will be written by the facility, approved by the DTSC and distributed to all individuals on the Project Mailing List maintained by the DTSC. The fact sheet will contain the following sections: an introduction, facility background, overview of the Corrective Action process, RFI results, health risk assessment (if available), facility map, mailing coupon, information contacts and repository locations. Additional fact sheets may be prepared and distributed if warranted.

A public meeting will be held if sufficient community interest exists. This meeting will be facilitated by the DTSC. Safety-Kleen and the DTSC will jointly coordinate the public meeting effort by identifying the location, date, notice of the meeting and agenda.

1.4 PROJECT MAILING LIST

The DTSC will utilize the project mailing list developed for previous permit activities or, if none exists, one will be developed specifically for the project. The DTSC will maintain the project mailing list and provide labels to Safety-Kleen as needed. To ensure that the mailing list is kept accurate, Safety-Kleen will forward all future additions and changes to the DTSC.

ATTACHMENT A

SUPPLEMENTAL SITE-SPECIFIC INFORMATION
COMMUNITY RELATIONS PLAN

DTSC Public Participation Specialist: _____

Phone #: _____

Local Document Repository: _____

Address: _____

_____

Phone #: _____

APPENDIX G

SAFETY-KLEEN CORP.
RCRA FACILITY ASSESSMENT

RCRA FACILITY ASSESSMENT

SAFETY-KLEEN CORPORATION
404 MARKET STREET
OAKLAND, CALIFORNIA 94607
EPA ID NO. CAD 053 044 053

SUBMITTED TO:

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IX
1235 MISSION STREET
SAN FRANCISCO, CALIFORNIA 94103

SUBMITTED BY:

STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES
TOXIC SUBSTANCES CONTROL PROGRAM
REGION 2
700 HEINZ STREET, BUILDING F
BERKELEY, CALIFORNIA 94710

SEPTEMBER 1990

TABLE OF CONTENTS

LIST OF FIGURES

EXECUTIVE SUMMARY

In 1984, the United States Congress amended the Resource Conservation Recovery Act (RCRA) by passing the Hazardous and Solid Waste Amendments (HSWA). These amendments provide authority to the United States Environmental Protection Agency (EPA) to require comprehensive corrective action on Solid Waste Management Units (SWMUs) and other areas of concern at facilities applying for a RCRA permit and those with RCRA interim status. The intent of this authority is to address previously unregulated releases of hazardous constituents to air, soil, surface water and ground water, and the generation of subsurface gas. To achieve this objective, a RCRA Facility Assessment (RFA) which identified and assessed the (SWMUs) and other areas of concern was performed at the Safety-Kleen Oakland facility.

This assessment is based on information found in RCRA and CERCLA files of EPA - Region IX, files and reports of the California Department of Health Services (DHS), the California Regional Water Quality Control Board (RWQCB), Alameda County Environmental Health Department, other local governmental agencies, and a visual site inspection (VSI). The RCRA Part B permit application for the facility was also reviewed. The RFA utilizes records review, data evaluation, interviews, and a visual site inspection to evaluate the potential for releases of hazardous constituents from areas identified during the assessment.

Safety-Kleen in Oakland is a treatment and storage facility. Safety-Kleen distributes and collects solvents used in a variety of businesses engaged in services such as automotive repair and industrial maintenance. The solvent distributed and collected consists of a mineral spirits solvent and an immersion cleaner. Prior to the spring of 1990, the immersion cleaner was a chlorinated solvent solution consisting of methylene chloride, orthodichlorobenzene, cresylic acid, and an amine additive. During the spring of 1990, Safety-Kleen reformulated its immersion cleaner so that it reportedly no longer contains the above chemicals in concentrations considered hazardous. The Department of Health Services (DHS), taking into consideration the new Total Characteristic Leaching Procedure (TCLP), has yet to determine whether or not the new immersion cleaner is hazardous. However, in a recent letter to DHS, Safety-Kleen states that its new immersion cleaner will be a hazardous waste under the new TCLP regulations which went into effect on September 25, 1990.

Safety-Kleen collects and stores the mineral spirits wastes in an underground storage tank and stores used immersion cleaner and

dry cleaning wastes in containers in the drum storage area. The dry cleaning wastes consist mostly of cartridge filters containing perchloroethylene. Physical treatment (filtration) is performed on the mineral spirits prior to discharge into the tank.

A total of 3 SWMUs and one area of concern were identified. The SWMUs and area of concern identified in the RFA are as follows:

- Drum Storage Areas (Unit 1)
- Underground Waste Storage Tank (Unit 2)
- Return/Fill Shelter - Barrel Washer (Unit 3)
- Underground Clean Mineral Spirits Storage Tank (Area of Concern 1 or AOC 1)

Of the three SWMUs and the area of concern evaluated, only the underground waste storage tank (Unit 2) and the underground clean mineral spirits storage tank (AOC 1) were found to have documented releases to the soil and/or groundwater. However, it has yet to be determined whether the release is from Unit 2 or AOC or both.

1.0 INTRODUCTION

In the past, Safety-Kleen Corporation's Oakland facility operated as a distribution and collection center for two types of solvents: a mineral spirits solvent and a special blend of chlorinated and water-phase solvents (immersion cleaner). Recently, Safety-Kleen has reformulated their immersion cleaner and now claims that their immersion cleaner is non-hazardous by current standards set forth in Title 22, California Code of Regulations (CCR) and 40 Code of Federal Regulations (CFR). The Department of Health Services (DHS), taking into consideration the new Total Characteristic Leaching Procedure (TCLP), has yet to determine whether or not the new immersion cleaner is hazardous. However, in a recent letter to DHS, Safety-Kleen states that their new immersion cleaner will be a hazardous waste under the new TCLP regulations. The new TCLP regulations went into effect on September 25, 1990.

Safety-Kleen now only distributes the new immersion cleaner but continues to accept the old immersion cleaner from customers that still have it.

These solvents are leased to a variety of businesses engaged in services such as automotive repair and industrial maintenance. Because these solvents are only leased to customers, they remain the property of Safety-Kleen. When the solvents become dirty and unusable, they are collected by Safety-Kleen and replaced with clean solvents. The used solvents (now considered hazardous wastes) are then taken back to Safety-Kleen's Oakland facility and stored. The immersion cleaner waste is stored in 16-gallon drums and the used mineral spirits solvent is poured into an underground storage tank. The used solvents are picked up periodically from the Oakland facility and transported to Safety-Kleen's recycling facility in Reedley, California for reclamation.

Safety-Kleen also collects hazardous waste from the dry cleaning industries. This waste consists mainly of perchloroethylene and is picked up and brought to the facility in 15- or 30-gallon drums. The waste is then held in the drum storage area. When a sufficient number of drums has been collected, the waste is transported to Safety-Kleen's recycling facility in Reedley, California.

The Safety-Kleen Oakland facility is located at 404 Market Street in Oakland, California (Figure 1). Safety-Kleen started operations at this location on February 1, 1975 at which time,

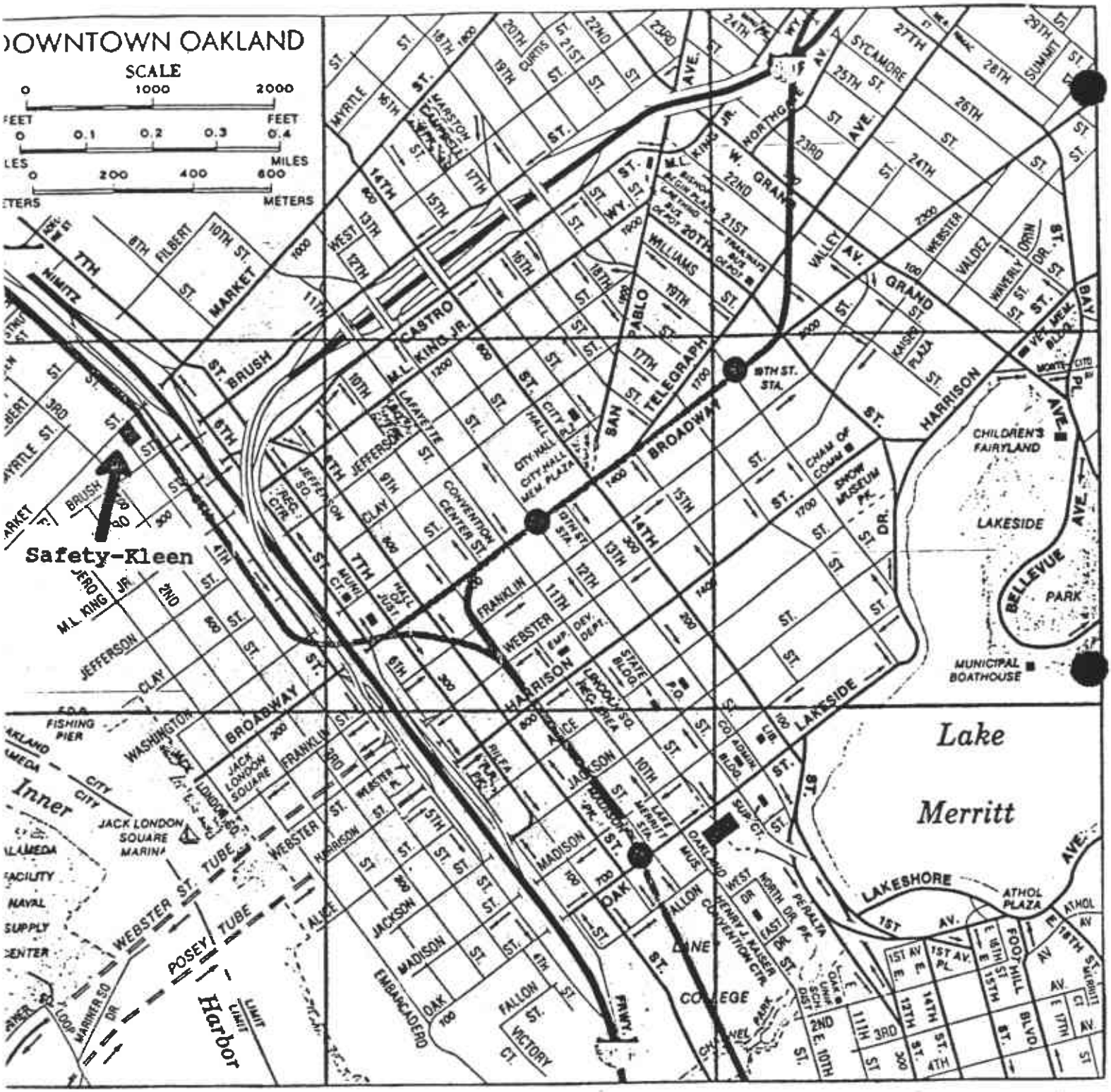


Figure 1
Location of Safety-Kleen
Oakland Facility

the property was leased from Bedford Properties. Safety-Kleen purchased this property from Bedford Properties on May 9, 1990. Safety-Kleen was granted interim status on December 11, 1981. In January 1986, Safety-Kleen submitted a Part B application to DHS and EPA for a permit to store hazardous waste in containers and tanks.

In 1984, the United States Congress amended the Resource Conservation Recovery Act (RCRA) by passing the Hazardous and Solid Waste Amendments (HSWA). These amendments provide authority to the United States Environmental Protection Agency (EPA) to require comprehensive corrective action on Solid Waste Management Units (SWMUs) and other areas of concern at facilities applying for a RCRA permit and those with RCRA interim status. The intent of this authority is to address previously unregulated releases of hazardous constituents to air, soil, surface water and ground water, and the generation of subsurface gas. In order to accomplish this objective, a RCRA Facility Assessment (RFA) is performed and consists of a preliminary data review, a site visit, and when warranted, sampling and analyses.

This report presents an evaluation of the SWMUs and areas of concern at Safety-Kleen's Oakland facility and summarizes the results of a record review, data evaluation, and site visit performed on the facility. Primary sources of information include the facility's Part B application, RCRA and CERCLA files of EPA, Region IX, and files and inspection reports of the California Department of Health Services (DHS) and the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. Other sources of information include phone conversations and visits to the Alameda County Environmental Health Department, East Bay Municipal Utility District, and the Bay Area Air Quality Management District.

Section 2.0 of this report describes the facility and its operation. Section 2.0 also provides a description of the other permits necessary. An overview of the environmental setting is given in Section 3.0. The Solid Waste Management Units are individually described in detail in Section 4.0. Section 5.0 summarizes the findings of the visual site inspection. Sections 6.0 and 7.0 provide a conclusion and suggestions for further action, respectively. The references are found in Section 8.0.

2.0 FACILITY DESCRIPTION

2.1 FACILITY OWNERSHIP

The Safety-Kleen Oakland facility is owned by Safety-Kleen Corporation which is headquartered in Elgin, Illinois. The building and the land on which the Oakland facility is situated originally belonged to Bedford Properties. Safety-Kleen had been at this location since they began their operation on February 1, 1975. On May 9, 1990, Safety-Kleen purchased this property from Bedford Properties.

2.2 FACILITY PROCESSES

Prior to the spring of 1990, Safety-Kleen distributed and collected two types of solvents from this location: a mineral spirits solvent and a special blend of chlorinated and water-phase solvent (immersion cleaner). Safety-Kleen has recently reformulated their immersion cleaner to classify it as non-hazardous. The new immersion cleaner is a mixture of glycol-ether compounds and does not contain the methylene chloride, cresylic acid, and ortho-dichlorobenzene present in the old formula. The new immersion cleaner consists of heavy aromatic naphtha cleaning solvents (aromatic 150), oleic acid, N-methyl-2-pyrrolidone, dipropylene glycol methyl ether, and less than one percent total chlorinated solvents. Safety-Kleen now only distributes the new immersion cleaner but continues to accept the old immersion cleaner from customers that still have it.

The company has claimed that this new immersion cleaner is non-hazardous because it does not meet the characteristics of a waste under 40 CFR 261.20 through 261.24. The new immersion cleaner has also been determined to be non-hazardous by Safety-Kleen under the criteria specified in Title 22, Article 11 of the California Code of Regulations. The Department of Health Services, taking into consideration the new Toxic Characteristic Leaching Procedure (TCLP), has yet to determine whether or not the new immersion cleaner is hazardous. However, in a recent letter to DHS, Safety-Kleen states that its new immersion cleaner is a hazardous waste under the new TCLP regulations which went into effect on September 25, 1990.

Safety-Kleen leases these solvents (mineral spirit, new immersion cleaner) to a variety of businesses which engage in services such as automotive repair and industrial maintenance. Because Safety-Kleen only leases these solvents to other companies, the

solvents remain the property of Safety-Kleen. When the solvents become dirty and unusable, Safety-Kleen replaces the used solvents with new solvents. The used solvents are taken back to the Oakland facility for storage. The used solvents are then picked up periodically and transported to Safety-Kleen's recycling facility in Reedley, California for reclamation.

The used immersion cleaner brought to the Oakland facility is stored in 16-gallon drums while used mineral spirits waste is in either 16-gallon or 30-gallon drums. Upon arrival at the facility, the drums of used immersion cleaner are taken to the drum storage area. The used immersion cleaner stays in the same 16-gallon drum in which it arrived. The used immersion cleaner is never transferred to another container.

Safety-Kleen also collects hazardous waste from the dry-cleaning industry. As the drums arrive at the facility, they are brought to the drum storage area. When enough drums have accumulated, the wastes are then transported to Safety-Kleen recycling facility in Reedley, California.

Based on the Part B application and a visual site inspection (VSI) performed on September 13, 1990, Safety-Kleen Oakland has two drum storage areas. The Part B application submitted in 1986 shows the drum storage areas are used to store sediment (dumpster mud) from cleaning the dumpsters in the return/fill shelter, spent immersion cleaner, and dry cleaning wastes. The wastes are not mixed while onsite and different wastes are segregated in color-coded drums to indicate their contents. Dumpster mud is stored in red 16-gallon drums, the old immersion cleaner is stored in gray 16-gallon drums, the new immersion cleaner is stored in gray/red 16-gallon drums, and the dry cleaning waste in blue 15- and 30-gallon drums and black 16-gallon drums.

The east drum storage area has a total storage capacity of 4,320 gallons of spent solvent. This area has secondary containment in the form of a six-inch wide, four-inch high steel reinforced concrete curb with a 12'L x 2'W x 2'6"D trench. The capacity of the trench is 448 gallons.

The west drum storage area has secondary containment consisting of a six-inch wide, four-inch high steel reinforced concrete curb with two 12'L x 2'W x 2'6"D trenches. The total capacity of the two trenches is 897 gallons. No more than 5,184 gallons of spent solvent are stored in this area at any time. An epoxy coating has been applied to the floors of both drum storage areas.

According to the 1989 Part B Application, Safety-Kleen in Oakland sent 138,360 gallons of used mineral spirits to the Reedley facility for reclamation in 1982 and 136,970 gallons in 1983. In addition, Safety-Kleen Oakland processed approximately 6,193 gallons of used immersion cleaner and removed approximately 50 gallons of dumpster mud in 1984. These quantities are fairly typical of the amounts of waste that are handled by this facility.

The used mineral spirits waste is brought to the facility in 16- or 30-gallon drums and is taken to the solvent return/fill shelter. No formal waste analysis is performed on either the mineral spirits waste or the used immersion cleaner. The only waste analysis performed is visual and olfactory evaluation by the driver.

In the past, the drums of used mineral spirits were opened and the contents poured into the wet dumpsters. The wet dumpsters, equipped with removable upper screening, were connected to an underground storage tank. The screening was designed to remove coarse solids and metal parts that may come with the returned solvent. The solvent settled to the bottom of the dumpsters and eventually overflowed to the underground storage tank after passing through a filter in the corner of the dumpsters. The shelter has a secondary containment capacity of over 1,000 gallons.

The facility has recently replaced the wet dumpsters with a barrel washing system. Mineral spirits wastes, brought to the facility in 16- or 30-gallon drums, are opened and poured into the barrel washer. The drums are then placed diagonally over the brushes of the washer. The washer is turned on and a stream of clean mineral spirits is shot through the nozzle. The brushes, along with the stream of clean mineral spirit, would remove any remaining solvent and sludge from the drum. The contents of the drum pass through a screen to remove any coarse solids and metal parts that may come with the returned solvent. The solvent then overflows to the underground storage tank. The capacity of the barrel washing system has not yet been determined.

Sludge accumulates at the bottom of the dumpster. This sludge is referred to as dumpster mud. Periodically, the sludge is removed from the dumpster with a shovel and put into 16-gallon drums for shipment to Safety-Kleen's recycling center. The drummed dumpster mud, while awaiting shipment, is temporarily stored in the drum storage area. Typical, not more than 10 drums of dumpster mud are stored with the used immersion cleaner drums.

The current underground storage tank was installed in June 1990. The tank is a 12,000-gallon double-walled tank. Secondary containment is provided for by the outer wall. The inner tank is cylindrical in shape and measures 32 feet long with a diameter of 8 feet. The outer tank measures 32.5 feet long with a diameter of 8.5 feet. There is a leak detection system between the tanks. The tanks are constructed of carbon steel with a minimum tensile strength of 58,000 psi. There is no incompatibility problem between the tanks and the used mineral spirits.

Prior to replacement with the current 12,000-gallon storage tank, the facility had two 6,000-gallon underground storage tanks which were installed in February 1975. At that time, the expected life of the tanks was 15 to 20 years. The tanks were single-walled, with no secondary containment. They were constructed of carbon steel with a minimum tensile strength of 58,000 psi. The tanks rested on natural soil with a 6-inch minimum bedding of washed clean, compacted sand.

The entire facility is paved. The drum storage area is located inside the warehouse building and occupies the north end of the building. The return/fill shelter (barrel washer) is located outside the northeast corner of the building. The two underground storage tanks are also located directly south of the return/fill shelter (Figure 2).

2.3 SOLID WASTE MANAGEMENT UNITS (SWMUs)

During the course of this review, 3 SWMUs and 1 Area of Concern were identified and evaluated. The two drum storage areas will be considered as one unit as they are fairly close to one another. Numerical unit designations associated with each unit indicate the subsection of the report which describes and evaluates them. The locations of identified units are shown in Figure 3.

4.1 - Drum Storage Areas (Unit 1)

4.2 - Underground Waste Storage Tank (Unit 2)

4.3 - Mineral Spirits Return/Fill Area [Barrel Washer] (Unit 3)

4.4 - Area of Concern [Underground Clean Mineral Spirit Storage Tank] (AOC 1)

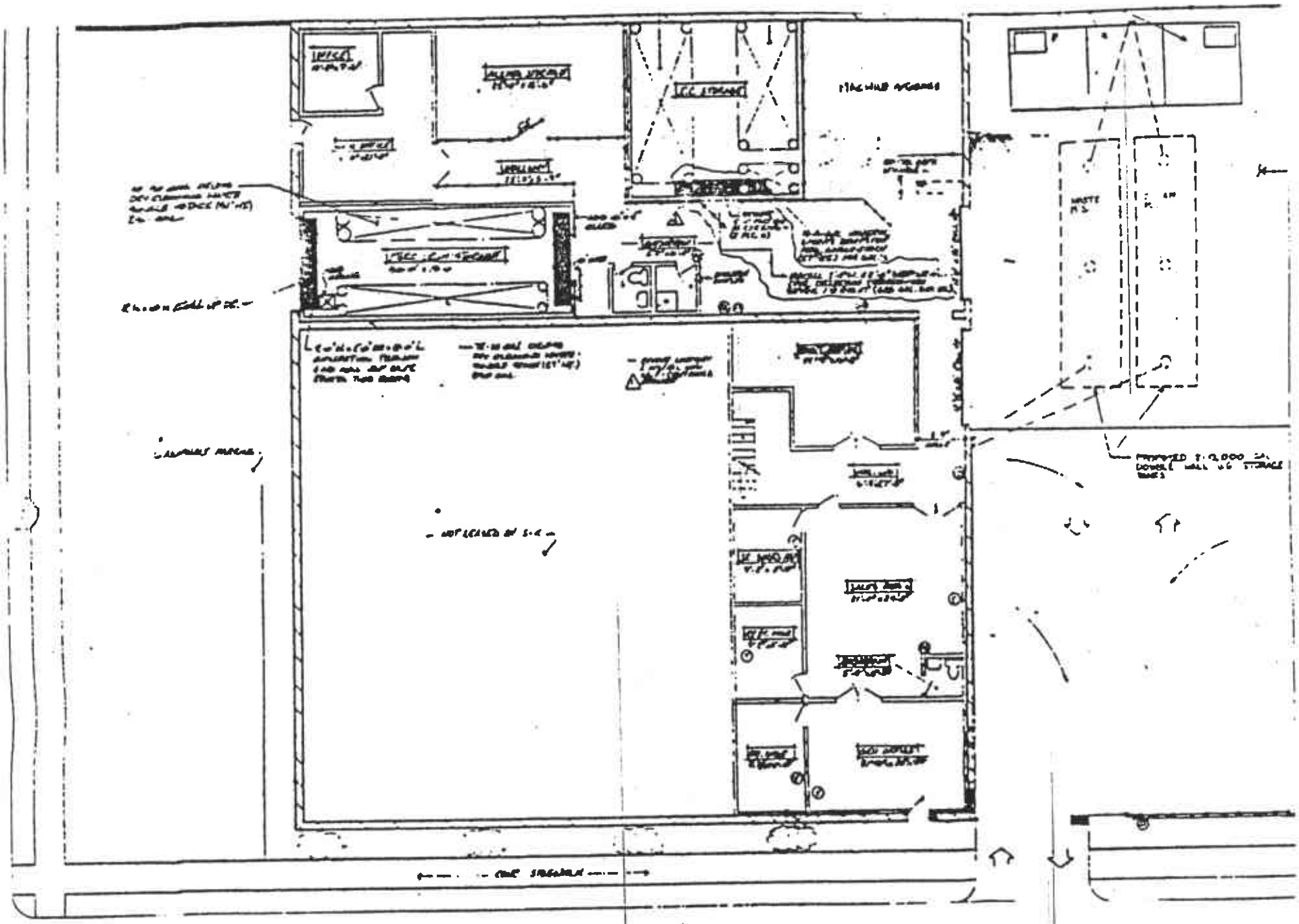


Figure 2
Site Map of Safety-Kleen
Oakland Facility

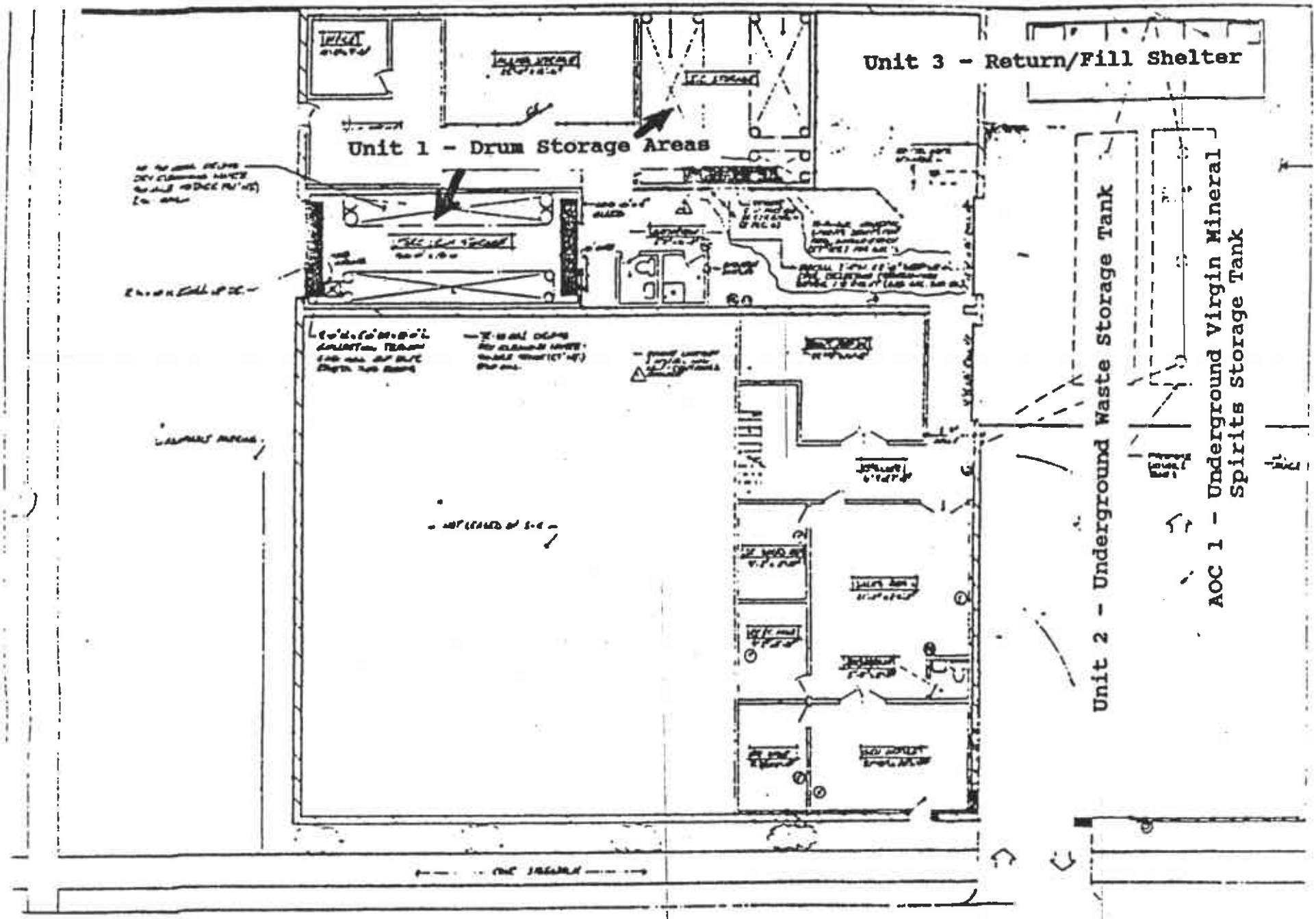


Figure 3
Location of SWMUs

2.4 REGULATORY PERMITS

Safety-Kleen submitted a Part A notification for the Oakland facility on November 18, 1980. An Interim Status Document was issued to Safety-Kleen on December 11, 1981. DHS called in Safety-Kleen's Part B application on October 29, 1985. Safety-Kleen subsequently submitted a Part B application on January 29, 1986. On June 26, 1986, Safety-Kleen requested a modification to the Part A application to allow for the acceptance of perchloroethylene wastes and other dry cleaning wastes. DHS approved Safety-Kleen's request to modify the Part A application for acceptance of dry cleaning wastes on March 17, 1987. DHS reviewed the Part B application and issued a Notice of Deficiency (NOD) to Safety-Kleen on September 19, 1988. DHS received a response to the September 19th NOD from Safety-Kleen on December 16, 1988. On September 19, 1989, DHS requested Safety-Kleen to submit an updated Part B application. DHS issued a second NOD to Safety-Kleen on July 5, 1990. Safety-Kleen submitted a response to the second NOD on August 16, 1990.

Records reviewed at various governmental agencies show Safety-Kleen has no permits from either the Bay Area Air Quality Management District or the East Bay Municipal Utility District.

3.0 ENVIRONMENTAL SETTING

3.1 LOCATION AND SURROUNDING LAND USE

Safety-Kleen Corporation's Oakland facility is located at 404 Market Street in Oakland, Alameda County, California and occupies approximately 5,324 square feet. The site is zoned M-30 by the City of Oakland for general commercial and light industrial use (Figure 4). The area immediately surrounding the facility is also zoned for general commercial and light industrial use. Approximately five blocks northeast of the facility are areas zoned for residential and commercial use. The major transportation arteries in the area are Interstate 880 (Nimitz Freeway), Broadway, and 4th Street.

3.2 TOPOGRAPHY AND METEOROLOGY

The land which Safety-Kleen occupies is essentially a flat plane with maximum difference in surface elevations within the site area being one foot.

The normal annual precipitation for the area is 18.03". The coldest month of the year is January with an average high temperature of 55°F and an average low temperature of 45°F. The hottest month of the year is September with an average high temperature of 70°F and an average low temperature of 58°F. The average yearly high temperature is 65°F and average yearly low temperature is 53°F. The prevailing wind direction for this area is from the west to northwest.

3.3 SURFACE WATER AND FLOODPLAIN

The Safety-Kleen site is located approximately 6,200 feet west of Lake Merritt and 2,200 feet north of the Oakland Inner Harbor Channel which is connected to San Francisco Bay. There are no other nearby bodies of surface water. Review of the Department of Water Resources well logs revealed no domestic, municipal, agricultural, or industrial water supply wells within one mile of the facility.

The portion of the Flood Administration flood map (Community Panel No. 065048-0015B) submitted in the Part B application indicates that the site is not within a 100-year floodplain.

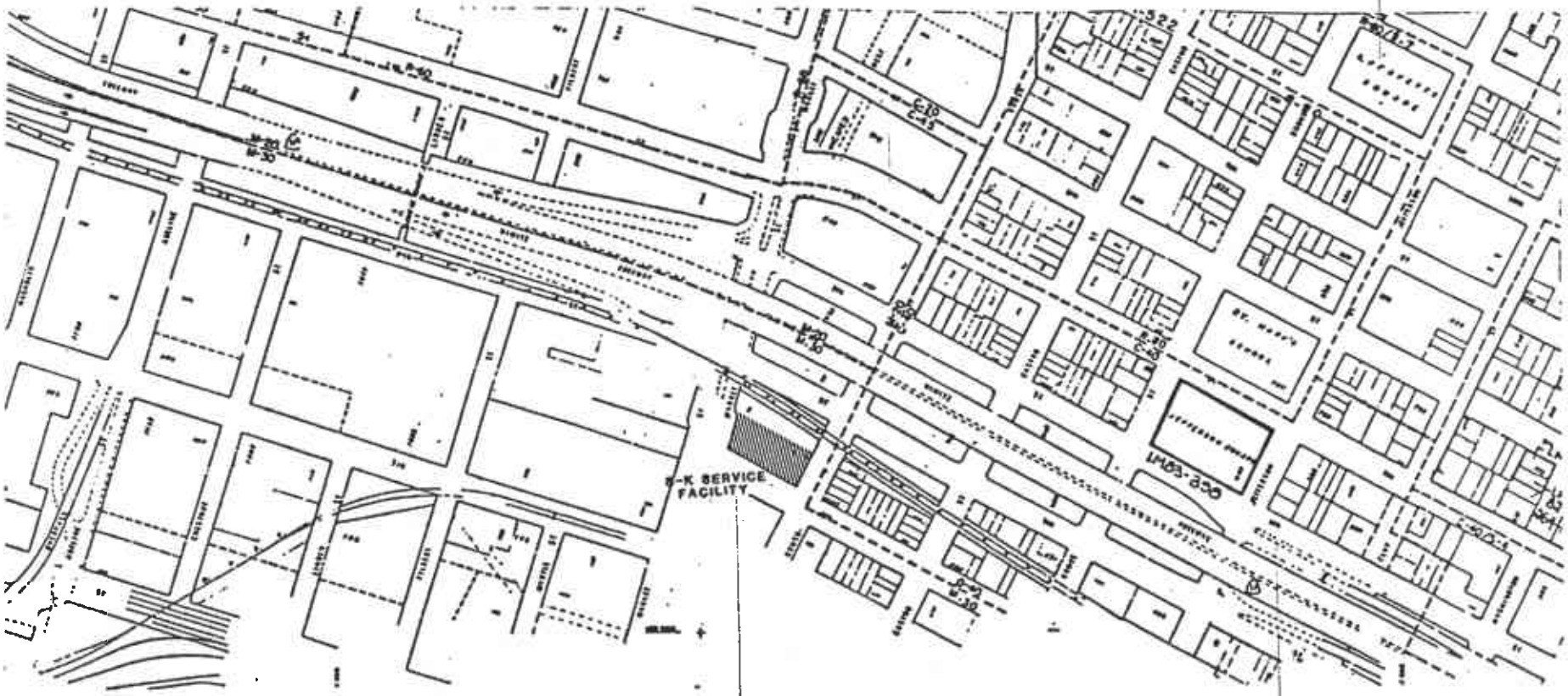


Figure 4
Zoning Map

3.4 GEOLOGY AND HYDROLOGY

The geologic formations underlying San Francisco Bay are divided into two distinct units that differ greatly in age and rock type. The bedrock underlying most of the San Francisco Bay is composed of Jurassic and Cretaceous sandstone, siltstone, chert, melange and ultramafic rocks of the Franciscan Complex. Total thickness of the Franciscan Complex is unknown. Beneath the site, Late Cenozoic continental and marine sediments of the Alameda Formation unconformably overlay the Franciscan bedrock and are composed of gravel, sand, silt, and clay which is locally organic rich and fossiliferous. Consolidation of the sediments increases with depth, and maximum known thickness is about 1,500 feet.

The Pleistocene-Quaternary Age Merritt Sand overlies the Alameda Formation (Figure 5) and consists of fine-grained sand and firm, clayey sand that contains bands and stringers of sandy clay and clay. One to two feet of loose, sandy silts covers the surface of the sand. These sediments were deposited by wind and water from beach and near-shore deposits. Maximum known thickness of the Merritt sand is approximately 65 feet.

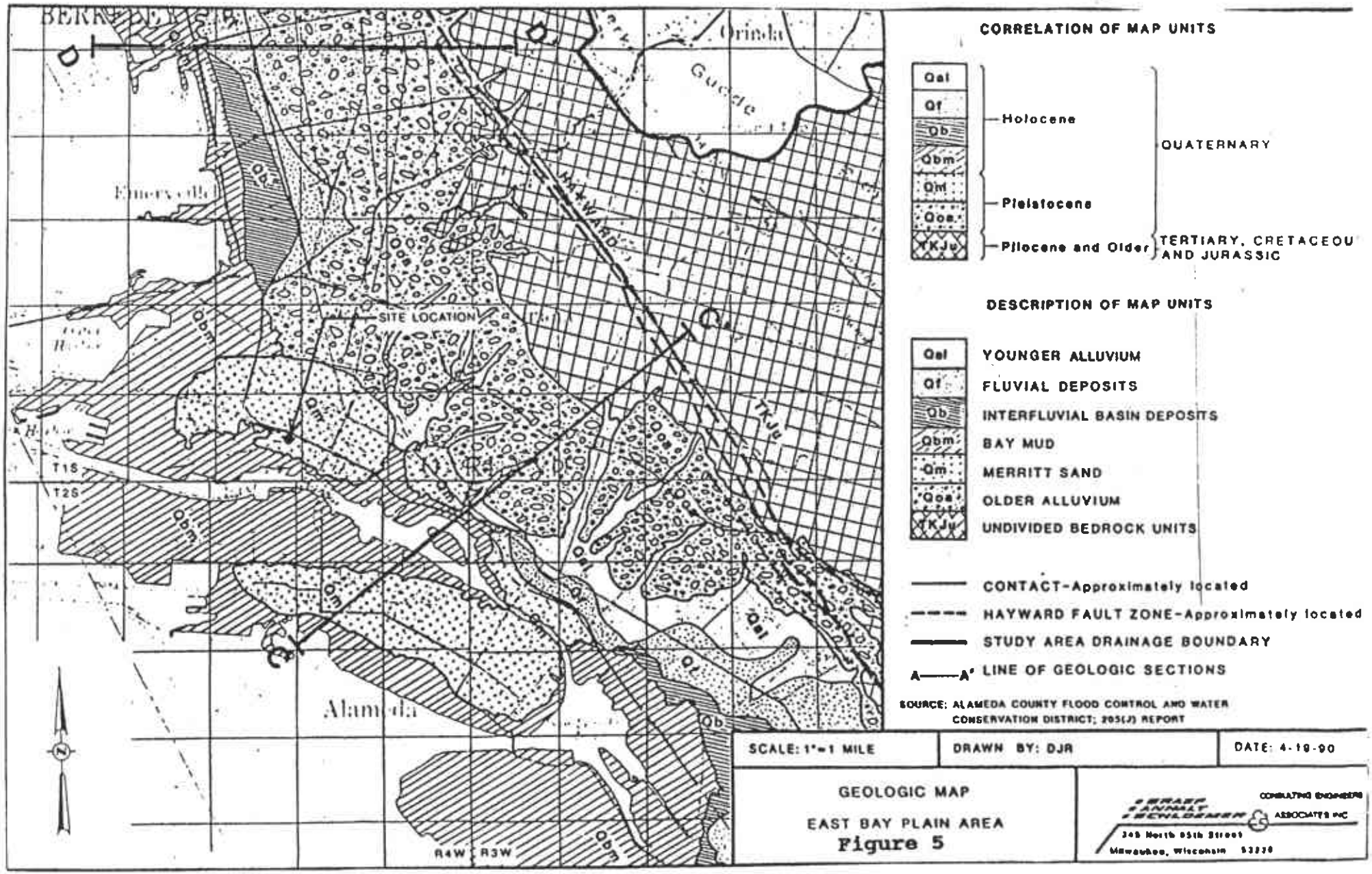
The Merritt sands beneath the site which were encountered in the soil borings performed by Groundwater Technology Inc., consist of interbedded sandy silt and sandy clayey silt to a depth of 20 feet at which point an unidentified impenetrable substrate was encountered.

The Franciscan Complex basement rocks are the oldest beneath the study area and are considered non-water bearing due to poor water yield. The Merritt Sands present beneath the site consist of sand, clayey sand, and sandy clay, and are the major water-yielding units in this area. Groundwater in these sediments is mainly unconfined.

Borings performed by Groundwater Technology Inc. found groundwater at the site to be at a depth of 6.75 feet below grade. Seasonal fluctuations can cause the depth to groundwater to range from about 7 to 13 feet below grade. A southerly groundwater flow direction has been estimated based on water levels in the monitoring wells.

3.5 SOIL AND GROUNDWATER CONTAMINATION

Three 8-inch diameter by 20-feet deep soil borings were drilled on the site between May 28 and 30, 1986 (Figure 6). Two of the three soil borings were converted into 2-inch diameter Polyvinyl Chloride (PVC) monitoring wells. Soil samples were collected at


CORRELATION OF MAP UNITS
Qal
Qf
Qb
Qbm
Qm
Qoa
TKJu
Holocene
Pleistocene
Pliocene and Older
QUATERNARY
TERTIARY, CRETACEOU AND JURASSIC
DESCRIPTION OF MAP UNITS
YOUNGER ALLUVIUM
FLUVIAL DEPOSITS
INTERFLUVIAL BASIN DEPOSITS
BAY MUD
MERRITT SAND
OLDER ALLUVIUM
UNDIVIDED BEDROCK UNITS
CONTACT-Approximately located
HAYWARD FAULT ZONE-Approximately located
STUDY AREA DRAINAGE BOUNDARY
A——A' LINE OF GEOLOGIC SECTIONS
SOURCE: ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT; 205(J) REPORT
SITE LOCATION
HAYWARD
Orinda
Alameda
T1S
T2S
R4W
R3W
SCALE: 1"=1 MILE
DRAWN BY: DJR
DATE: 4-19-90
GEOLOGIC MAP
EAST BAY PLAIN AREA
Figure 5
CONSULTING ENGINEERS
ASSOCIATES INC
345 North 95th Street
Milwaukee, Wisconsin 53226

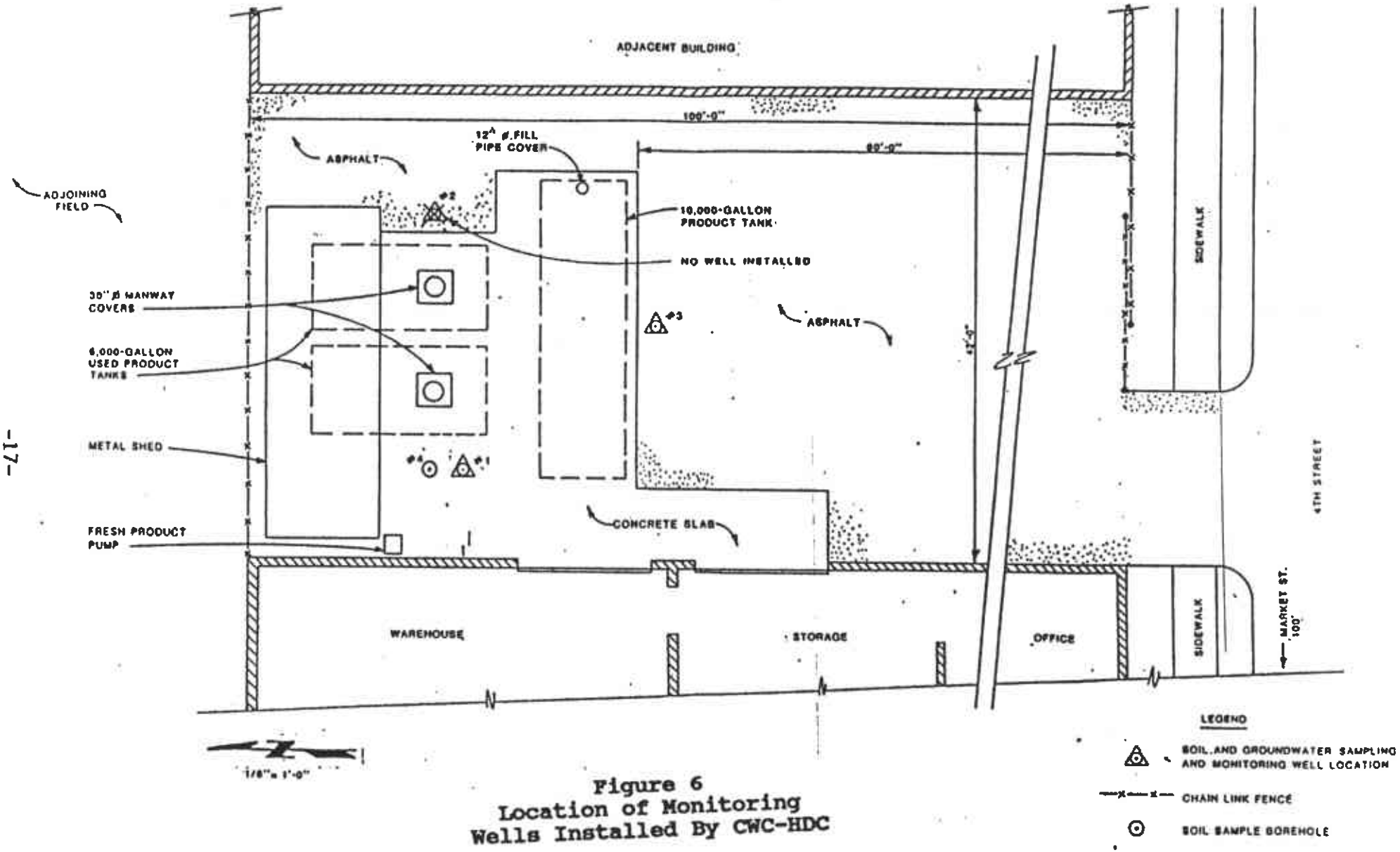


Figure 6
Location of Monitoring Wells Installed By CWC-HDC

the ground surface, and from 5-feet and 10-feet below ground surface in each of the borings. An additional soil sample was collected from the surface at Location 4. Borings 1 and 3 were subsequently converted to groundwater monitoring wells. Groundwater samples were collected from the two monitoring wells and the unconverted boring (Boring 2).

Analytical laboratory analyses of the water and soil were performed by EPA Modified Method 8270, flame-ionization detector. No analytical laboratory analyses were run to detect the presence of halogenated hydrocarbons which are known constituents of mineral spirits.

Results from laboratory analyses of the soil and groundwater samples indicate that contamination to both soil and groundwater has occurred. Monitoring wells 1 and 3 had groundwater contamination of 42 and 52 ppm mineral spirits, respectively. Groundwater samples obtained from soil boring 2 indicated mineral spirits contamination of 410 ppm. Analyses of soil samples extracted from the soil borings indicated a range of 160 to 10,000 ppm mineral spirits contamination, with the highest contamination detected approximately 4-feet below the water table (10-feet below grade) for monitoring well 1.

4.1 DRUM STORAGE AREAS (Unit 1)

4.1.1 Information Summary

Unit Description: The drum storage areas are located at the rear of the warehouse building. The west drum storage area is approximately 15 feet by 22 feet. The east drum storage area is approximately 22 feet by 22 feet. The floor of the drum storage areas are made of steel-reinforced concrete and are sealed with an epoxy coating. The number and types of containers held in each area may vary, but the maximum volume capacity of the west area is 4,320 gallons and of the east storage area is 5,184 gallons. Secondary containment is provided by a 6-inch wide, 4-inch high steel reinforced concrete curb with three trenches each measuring 12'L x 2'W x 2'6"D and having a capacity of 448 gallons. The west drum storage area has two trenches while the east drum storage area has one trench. Since the drum storage areas are adjacent to one another, they will be considered as one SWMU.

Date of Startup: The drum storage areas became active in 1975.

Date of Closure: The drum storage areas are still active units.

Wastes Managed: Information in the Part B application shows the wastes stored in east storage area are used immersion cleaner (old formula) and mineral spirits dumpster mud. Dry cleaning wastes are stored in the west storage area. Safety-Kleen also used this facility as a transfer station, and stores wastes such as waste paint and inks, lacquer thinner, 1,1,1-TCA, and ethylene glycol for up to 144 hours. These wastes are stored in the east storage area.

The immersion cleaner was a chlorinated solvent solution consisting of two-phases: an upper aqueous (water) layer and a lower non-aqueous (solvent) layer. The aqueous or water phase consisted of water and Dresinate TX (a sodium soap of tall oil). The solvent phase was composed of methylene chloride, orthodichlorobenzene, cresylic acid, and an amine additive (Armohib 28). Also included in the waste were various amounts of oil, grease, and solids which might have been picked up during degreasing operations.

The mineral spirits dumpster mud contains soils, oil, grease, water, small amounts of mineral spirits, and solids which may

have been picked up during degreasing operations. The mineral spirits primarily consist of petroleum hydrocarbon fractions with boiling points between 310 °F and 400 °F. Impurities such as light hydrocarbons and chlorinated hydrocarbons usually make up less than one percent of the total volume of the mineral spirits solvent.

The dry cleaning wastes mainly consist of filters contaminated with perchloroethylene. The dry cleaning filter wastes come in two types: cartridge filter and muck. In addition to the construction material of the cartridge filter consisting of steel, paper, clay, and carbon, the used cartridge retains solvent, oil, grease, and undissolved elements such as lint and soil. The solvent retained in the filter cartridge generally amounts to less than 50% of the total cartridge weight.

The other type of filter consists of a mixture of powdered materials, which is mostly diatomaceous earth and carbon. In addition to the lint, soil, grease and oil retained by the filter, about 40 to 50% by weight of the "muck" is absorbed solvent.

The facility also stores its new immersion cleaner in the east storage area. The new immersion cleaner is a mixture of glycol-ether compounds and does not contain the methylene chloride, cresylic acid, and ortho-dichlorobenzene present in the old formula. The new immersion cleaner consists of heavy aromatic naphtha cleaning solvents (aromatic 150), oleic acid, N-methyl-2-pyrrolidone, dipropylene glycol methyl ether, and less than one percent total chlorinated solvents.

The company has claimed that this new immersion cleaner is non-hazardous because it does not meet the characteristics of a waste under 40 CFR 261.20 through 261.24. The new immersion cleaner has also been determined to be non-hazardous by Safety-Kleen under the criteria specified in Title 22, Article 11 of the California Code of Regulations. However, in a recent letter to DHS, Safety-Kleen states that its new immersion cleaner will be a hazardous waste under the TCLP regulations.

Release Controls: The drum storage area is located inside a building structure with a roof to prevent any rainfall from collecting in the containment system. The containment system consists of a four-inch high and six-inch wide curb around the drum storage area with three 12'L x 2'W x 2'6"D trenches to collect any spilled material. Each trench has a capacity of 448 gallons, for a total of 1,344 gallons. The floor of the drum storage area is constructed of steel reinforced concrete and

sealed with an epoxy. In addition, all of the drums have lids which are closed at all times. The immersion cleaner waste stays in the same drum in which it arrived. No immersion cleaner waste is transferred to another container.

History of Releases: There was no file evidence of releases from this storage area.

4.1.2 Results of Visual Site Inspection (VSI)

A visual site inspection (VSI) was performed on September 13, 1990. The VSI showed that drum storage areas are at the rear of the warehouse building. Dry cleaning wastes were stored in the west storage area and all other wastes were stored in the east storage area. Both storage areas have chain-link fences around them. On top of the fences is barbed-wire. The floor of the storage areas is covered with an epoxy coating. No cracks were noticed in the floor.

Several spots on bare concrete were noticed on the floor of both storage areas. It was apparent that the epoxy coating was gone. When the facility manager was asked about the spots, he said that he didn't know what happened to the epoxy coating. Alfred Wong of DHS told the facility manager that this situation was similar to that at the Rohnert Park facility. The Rohnert Park Branch Manager said that a leak in a drum of new immersion cleaner had completely dissolved the epoxy coating off the floor.

Even though the new immersion cleaner may be "non-hazardous", spills of the immersion cleaner should be addressed (reported and/or recorded), due to the probable compatibility problem with the epoxy coating on the floor.

4.1.3 Conclusions

Soil/Groundwater Release Potential: There is a low potential for past and ongoing releases to soil and groundwater since the floor is made of concrete and is covered with an epoxy coating. Also, the floor had no cracks and the area is curbed.

Surface Water Release Potential: There is a low potential for releases to surface water since this area is curbed to prevent any waste from running offsite. Also, trenches are in place to collect any spilled wastes.

Air Release Potential: There is a low potential for releases to air since the drums in the area have been closed at all times.

Subsurface Gas Release Potential: There is no potential for generation of subsurface gas since the wastes managed are not highly volatile.

4.2 UNDERGROUND STORAGE TANK (Unit 2)

4.2.1 Information Summary

Unit Description: The underground storage tank is located outside the northeast end of the warehouse and was installed in June of 1990. The tank has a capacity of 12,000-gallons and is constructed of carbon steel with a minimum tensile strength of 58,000 psi. This is a double-walled tank. Secondary containment is provided for by the outer wall. The tank is cylindrical in shape. The outer tank measures 32.5 feet long with a diameter of 8.5 feet. The inner tank measures 32 feet long with a diameter of 8 feet. A leak detection system is installed in the interstice between the tanks. The tank is also equipped with a high level alarm and an automatic feed cutoff system which is set at 95% of the tank volume (11,400 gallons). The tank is supported on at least one foot of bedding and is anchored by being bolted to concrete deadmen.

Prior to June 1990, there were two 6,000-gallon underground storage tanks in the same location (Figure 7) as the current tank. The two tanks were installed in February 1975. Each tank was cylindrical in shape and measured 16 feet in length with a diameter of 8 feet. The tanks were constructed of carbon steel with a minimum tensile strength of 58,000 psi. Groundwater Technology Incorporated (GWT) tested the tanks for leaks on June 22 and 23, 1988 and found one tank to have an apparent leak rate of .035 gallon per hour and the other tank to have an apparent leak rate of .013 gallon per hour. Since the apparent leak rates were less than the .05 gallon per hour established by the National Fire Protection Association for a 6,000-gallon tank, GWT concluded that there were no leaks in the tanks. Although the tanks themselves were found to be not leaking, several piping and fitting leaks were discovered.

Date of Startup: The two 6,000-gallon underground waste storage tanks went into service in February 1975. The present underground storage tank was installed in June 1990.

Date of Closure: The two 6,000-gallon underground storage tanks were closed in June 1990. The current underground waste storage tank is still an active unit.

Waste Managed: Prior to June 1990, the old 6,000-gallon underground storage tanks were connected to the wet dumpsters. The current 12,000-gallon underground storage tank is now connected to the new barrel washing system and stores used mineral spirits. The mineral spirits primarily consist of

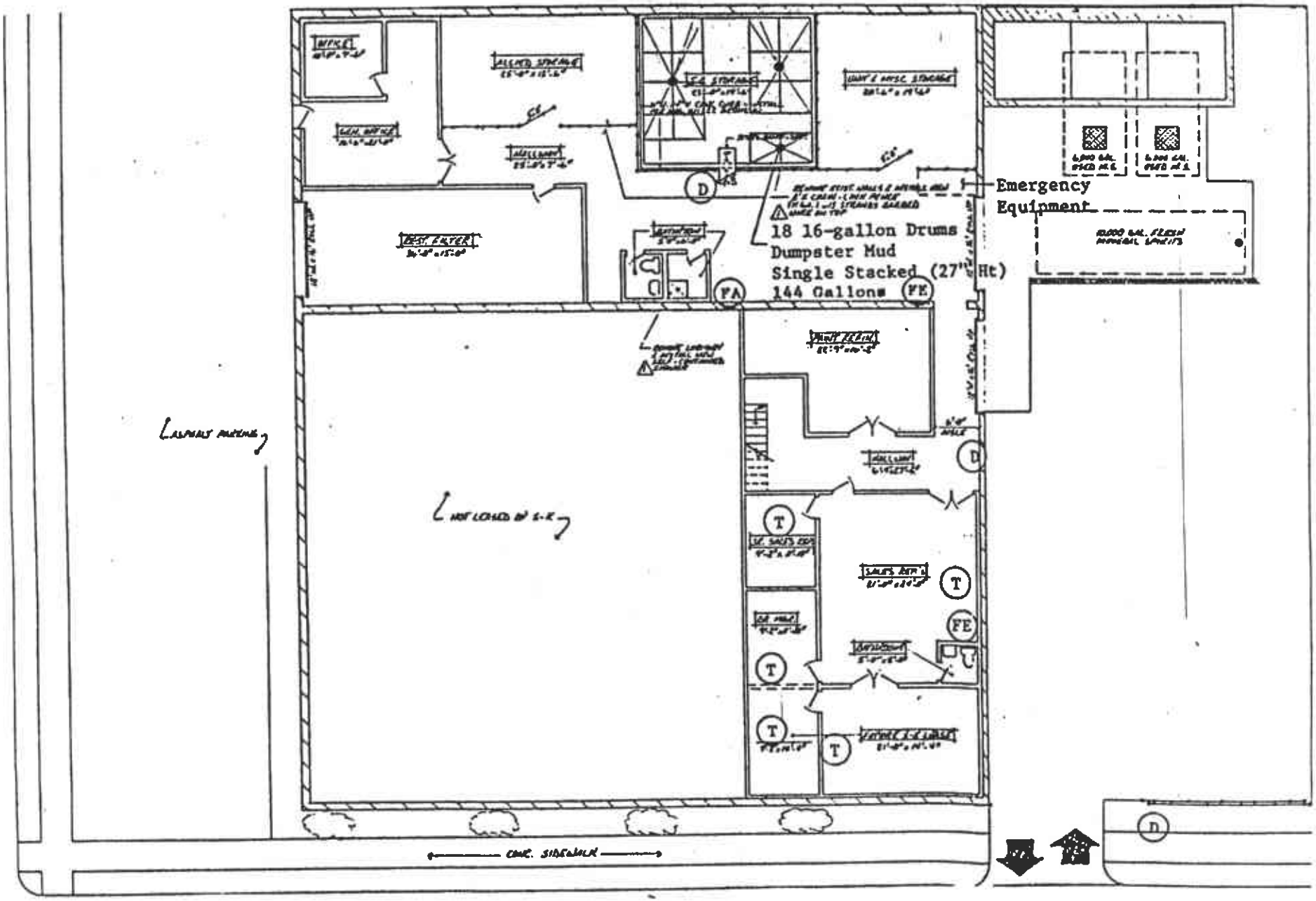


Figure 7
Location of Old 6000-Gallon
Underground Storage Tank

petroleum hydrocarbon fractions with boiling points between 310 °F and 400 °F. Impurities such as light hydrocarbons and chlorinated hydrocarbons usually make up less than one percent of the total volume of the mineral spirits solvent.

Release Controls: The current 12,000-gallon tank is a double-walled tank. Secondary containment is provided by the outer wall. There is a leak detection system in the interstice between the tanks. The tank has a venting system designed in accordance with Underwriter Laboratory Standard I. The tank also has a high level alarm and an automatic feed cutoff which are set at 95% of the tank volume (11,400 gallons).

The old 6,000-gallons tanks were single-wall tanks with no secondary containment. No leak detection system or high-level alarm was installed. The level of waste in the tank was measured using a level stick.

History of Releases: There have been documented releases from the underground storage tank (Unit 2). Records from the Alameda County Environmental Health Department indicate that on June 14, 1988, a leak of chlorinated hydrocarbons solvents from the underground storage tanks had occurred. The quantity of mineral spirits releases was unknown but an estimate of the quantity threatened to be released was approximately 22,000 gallons.

Documents from Safety-Kleen reveal that 125 gallons of mineral spirits waste was released on July 28, 1988 due to an overflow of the underground storage tank. Most of the wastes were cleaned up with absorbent pads but some were absorbed by nearby dirt and soil. The documents from Safety-Kleen also reveal that on numerous occasions, spills had occurred due to drums being tipped over in the loading/unloading area.

Safety-Kleen contracted CWC-HDR Consulting Engineers to perform a subsurface investigation. CWC-HDR's investigation was conducted between May 28 and May 30, 1986. The results of the investigation around the tanks indicated that contamination of both the soils and groundwater had occurred.

CWC-HDR's investigation included drilling three 20-foot depth soil borings, collection of soil samples for laboratory analyses, installation of two groundwater monitoring wells, and collection of groundwater samples for laboratory analyses. The locations of these monitoring wells are shown in Figure 6. At the location of monitoring well no. 1, concentrations of mineral spirits in the soil were at 2,300 ppm just beneath the concrete. The concentration of a grab sample collected at the ground surface of hole no. 4, located 7 feet west of monitoring well no. 1, was 5,100 ppm. The concentration of contamination at monitoring well

no. 1 increased with depth to 10,000 ppm at a depth of 10 feet. This sample was approximately 3 feet beneath the groundwater level. Attempts at collecting samples at 15 feet were not successful. A thin layer of solvent was found to be floating on the water surface after drilling. The well casing was installed and the well was then purged of 5 casing volumes prior to sampling. The concentration of mineral spirits found in the groundwater sample was 42 ppm.

At the proposed location of monitoring well no. 2, the ground surface sample showed a concentration of 160 ppm. Again, concentrations continued to increase in the samples collected at 5 and 10 feet. The concentration of mineral spirits at 5 feet was 3,000 ppm and at 10 feet was 6,600 ppm. A sample was successfully collected from this borehole at 15 feet which had a concentration of 55 ppm of mineral spirits. During the sampling procedure, soils forced their way into the hollow stem auger. Due to the resulting difficulties, this monitoring well was not installed. A layer of solvent approximately 1/2-inch thick was found floating on the groundwater surface of the unpurged borehole. A groundwater sample was collected from beneath the solvent layer that had a concentration of 410 ppm. This borehole was filled with concrete at the completion of this investigation.

At the location of monitoring well no. 3, samples were collected at ground surface at 5 and 10 feet. Although the ground surface sample showed no contamination, the 5 and 10 foot samples had concentrations of 2,400 ppm and 4,900 ppm, respectively. A thin layer of solvent was found at this location also. The casing was installed and the well was purged. The concentration in the groundwater sample collected was 52 ppm.

Additional site assessment is being performed by Groundwater Technology, Incorporated (GWT). It includes a soil-gas survey, soil sampling and analyses, tank precision testing, installation and sampling of twelve shallow (30-foot depth) monitoring wells (Figure 8) and one deeper well (65-foot depth). To date, the assessment has not been completed.

4.2.2 Results of Visual Site Inspection

Since this is an underground tank, observations are very limited. No discoloration was noticed around the discharge port of the tank nor on the concrete loading/unloading area directly above the tank. However, on the morning of the VSI, Safety-Kleen personnel were seen hosing down the loading/unloading area.

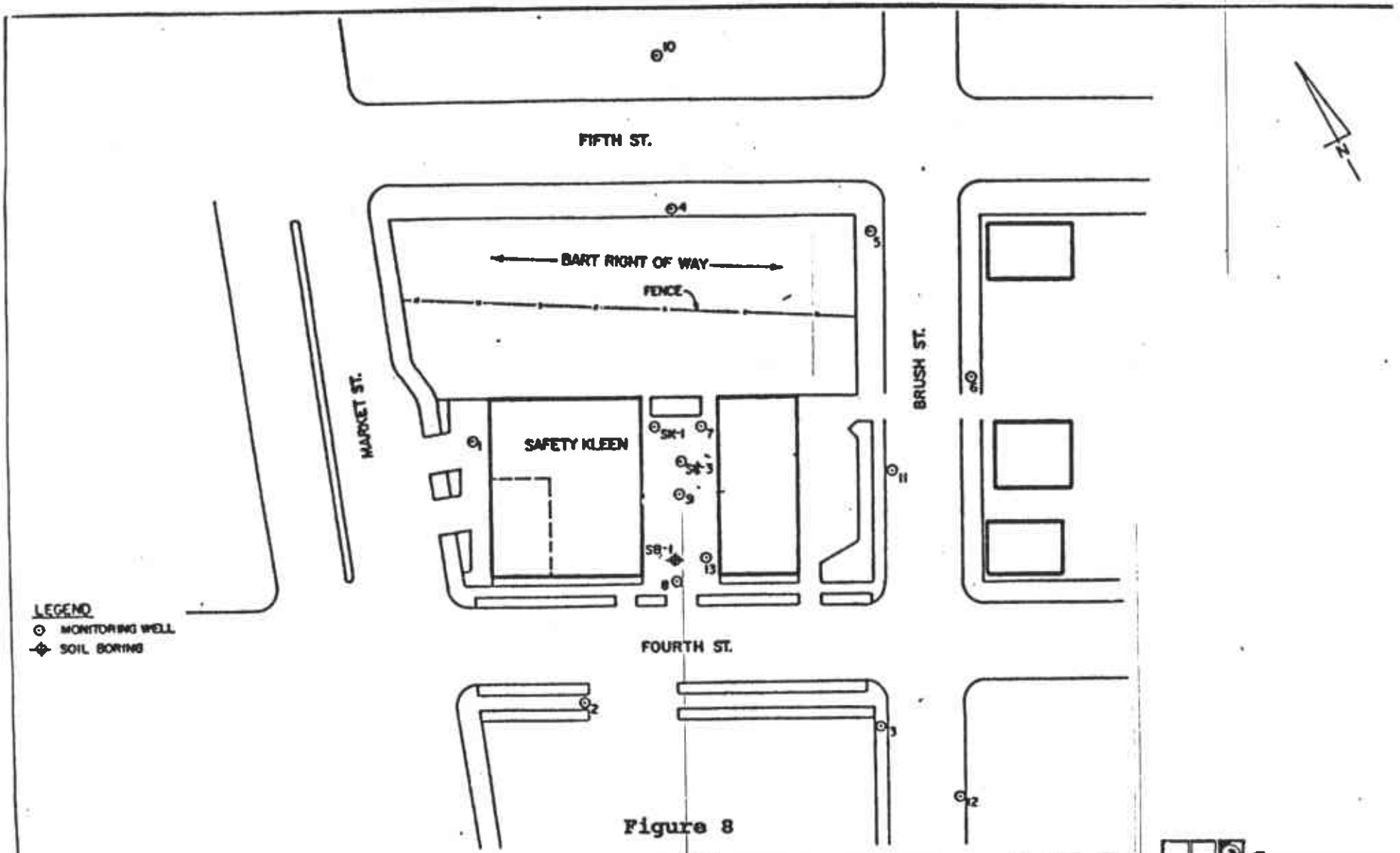


Figure 8

MONITORING WELL AND SOIL BORING LOCATIONS

(Installed By Groundwater Technology, Incorporated)

SAFETY KLEEN
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, IN

4.2.3 Conclusions

Soil/Groundwater Release Potential: There have been documented past releases to the soil and groundwater. Records from the RWQCB, Alameda County Environmental Health, and Safety-Kleen show unauthorized releases have occurred on June 14, 1988 and July 28, 1988.

There is a low potential for ongoing releases since the old single-wall tanks have been replaced with a double-walled tank and a leak detection system and high level alarm have been installed.

Surface Water Releases Potential: There is a low potential for direct releases to surface water since this tank is underground, has secondary containment, and the nearest surface water is approximately one-third of a mile away.

Air Releases Potential: There is a low potential for past or ongoing releases to the air because the tank is underground and the mineral spirits waste stored in the tank is not highly volatile.

Subsurface Gas Release Potential: There is a low potential for generation of subsurface gas because the mineral spirits waste stored in the tank is not highly volatile.

4.3 MINERAL SPIRITS RETURN/FILL AREA (Unit 3)

4.3.1 Information Summary

Unit Description: The mineral spirits return/fill area contained the wet dumpsters. However, the facility replaced the wet dumpsters with a new barrel washing system in June 1990. The barrel washer is the receptacle for the used mineral spirits when the used solvents are emptied from the drums into the underground storage tank. The contents of the drum are poured into the barrel washer which is designed to remove any coarse solids and metal parts that may come with the returned solvent. The liquid portion settles to the bottom of the dumpster and eventually overflows to the underground storage tank after passing through a filter. The drum is then placed on the barrel washer and when activated, a stream of clean mineral spirits is sprayed and brushes are rotated to remove any remaining waste in the drum.

Date of Startup: The mineral spirits return/fill area became active in February 1975. The current drum washing system was installed in June 1990.

Date of Closure: The mineral spirits return/fill area is still an active unit. The old wet dumpsters were closed in June 1990.

Wastes Managed: Used mineral spirits returned to Safety-Kleen are poured from drums into the barrel washer. The used mineral spirits contain soils, oil, grease, water, mineral spirits, and other solids which may have been picked up during degreasing operations. Mineral spirits primarily consist of petroleum hydrocarbon fractions with boiling points between 310 °F and 400 °F. Impurities such as light hydrocarbons and chlorinated hydrocarbons usually make up less than one percent of the total volume of the mineral spirits solvent.

A sludge accumulates at the bottom of the barrel washer. The sludge or dumpster mud normally contains very little free liquid. The dumpster mud typically contains soils, oil, grease, water, small amounts of mineral spirits, and other solids which may have been picked up during degreasing operations. The mud is removed from the dumpster with a shovel and placed into 16-gallon drums and shipped to the Recycle Center.

Release Control: The solvent return/fill shelter which housed the barrel washing system has a splashguard to prevent any waste from running down the side of the shelter and secondary containment to capture any spilled material.

History of Releases: There is no file evidence of releases from this unit.

4.3.2 Results of the Visual Site Inspection

The VSI showed that the mineral spirits fill/return shelter is located outside the northeast corner of the facility. There were no stains visible around the shelter. However, on the morning of the VSI, a Safety-Kleen employee was observed hosing down the loading/unloading area directly in front of the shelter.

The facility replaced the old dumpster with a new barrel washing system in June 1990. The purpose of the new barrel washer is essentially the same as the old dumpster and that is to remove any foreign objects (metal parts, etc.) that may have been returned with the solvent.

4.3.3 Conclusions

Soil/Groundwater Release Potential: There is a medium potential for past releases to the soil and groundwater because waste poured into the old wet dumpster could easily splash onto the wall of the fill/return shed and run down the side of the shed onto the ground.

There is a low potential for ongoing releases to soil and groundwater because the facility installed splashguards on the shed and any waste splash onto the walls would now run into the secondary containment system.

Surface Water Release Potential: Since this area does have secondary containment and the nearest surface water is approximately 1/3 of a mile away, there is a low potential for direct release to surface water.

Air Releases Potential: There is a medium potential for past and ongoing releases to air since this unit is outdoor and is not totally enclosed.

Subsurface Gas Release Potential: There is no potential for generation of subsurface gases because the mineral spirits waste managed is not highly volatile and the unit has secondary containment.

4.4 UNDERGROUND CLEAN MINERAL SPIRITS STORAGE TANK (AREA OF CONCERN - AOC 1)

4.4.1 Information Summary

Unit Description: Safety-Kleen also has an underground storage tank which is used to store clean mineral spirits. This tank is connected to hoses in the return/fill shelter. The clean mineral spirits are pumped into 16- and 30-gallon containers to be sent to customers in exchange for spent mineral spirits. The tank is a double-walled tank, constructed of carbon steel. It is cylindrical in shape and the outer tank measures 32.5 feet long with a diameter of 8.5 feet. The inner tank is 32 feet long with a diameter of 8 feet. The tank has a capacity of 12,000 gallons and is located adjacent to the underground waste storage tank. This tank was placed into service in June 1990.

Prior to June 1990, there was a 10,000-gallon single-walled tank at the facility. This tank was removed in June 1990 and replaced with the current 12,000-gallon double-walled tank.

Date of Startup: This tank was installed in June 1990. The old 10,000-gallon tank went into service in February 1975.

Date of Closure: The old 10,000-gallon tank was removed in June 1990. The current 12,000-gallon tank is still an active unit.

Waste Managed: This tank stores virgin mineral spirits. The mineral spirits primarily consist of petroleum hydrocarbon fractions with boiling points between 310 ^{o}F and 400 ^{o}F.

Release Controls: The current 12,000-gallon tank is a double-walled tank. Secondary containment is provided by the outer wall. There is a leak detection system in the interstice between the tanks. The tank has a venting system designed in accordance with Underwriter Laboratory Standard I. The tank also has a high level alarm and an automatic feed cutoff which are set at 95% of the tank volume (11,400 gallons).

The old 10,000-gallons tank was a single-wall tank with no secondary containment. No leak detection system or high-level alarm was installed. The level of waste in the tank was measured using a level stick.

History of Releases: Records and other documents from the RWQCB, Alameda County Environmental Health, and Safety-Kleen show releases have occurred but did not specify whether the releases were from the old 6,000-gallon waste storage tanks (Unit 2) or

the old 10,000-gallon product tank (AOC 1), or both. For further information regarding the history of releases, refer to Section 4.2.

4.4.2 Results of Visual Site Inspection

Since this is an underground tank, observations are very limited. No discoloration was noticed around the discharge port of the tank nor on the concrete loading/unloading area directly above the tank. However, on the morning of the VSI, a Safety-Kleen employee was seen hosing down the loading/unloading area.

4.4.3 Conclusions

Soil/Groundwater Release Potential: There have been documented past releases to the soil and groundwater. Records from the RWQCB, Alameda County Environmental Health, and Safety-Kleen show unauthorized releases have occurred on June 14, 1988 and July 28, 1988. However, it has yet to be determined whether the releases were from the old 6,000-gallon waste storage tanks (Unit 2) or the old 10,000-gallon product storage tank (AOC 1), or both.

There is a low potential for ongoing releases since the old single-wall tank has been replaced with a double-walled tank and a leak detection system and high level alarm have been installed.

Surface Water Releases Potential: There is a low potential for direct releases to surface water since this tank is underground, has secondary containment, and the nearest surface water is approximately one-third of a mile away.

Air Releases Potential: There is a low potential for past or ongoing releases to the air because the tank is underground and the mineral spirits waste stored in the tank is not highly volatile.

Subsurface Gas Release Potential: There is a low potential for generation of subsurface gas because the mineral spirits waste stored in the tank is not highly volatile.

5.0 SUMMARY OF VISUAL SITE INSPECTION

A visual site inspection (VSI) was conducted by DHS personnel to identify and evaluate solid waste management units (SWMUs) and other areas of concern at the Safety-Kleen facility in Oakland, California on September 13, 1990. The weather was partly cloudy and the temperature was about 50 °F. The inspection started at approximately 9:25 A.M. with a meeting among Jim Knous and Bill Spencer of Safety-Kleen, and Alfred Wong and Guillermo Montes of DHS.

Alfred Wong explained the purpose of the VSI to the facility representatives. Afterwards, DHS personnel interviewed them concerning the history, operational procedures, and waste management practices at Safety-Kleen. A site tour was conducted following the meeting. At that time, DHS personnel inquired about the operational aspects of the new barrel washing system. Safety-Kleen representatives provided a demonstration of the barrel washing system. Photographs of the entire facility appear in Appendix A. All SWMUs and areas of concern identified in the preliminary file review were inspected. An exit meeting was held following the site tour. DHS personnel asked facility representatives to confirm or clarify information obtained during the site tour. DHS staff then explained the next stage of the assessment to facility representatives. The meeting and tour of the facility were completed in approximately one and one-half hour.

No new SWMUs or areas of concern were identified during the inspection, but one problems was discovered and noted as follows:

1. Several patches of bare concrete were noticed. The epoxy coating on the floor had been completely dissolved.

6.0 CONCLUSIONS

Safety-Kleen Oakland is a treatment and storage facility. The facility is located at 404 Market Street in Oakland, California, and has been in operation at this location since 1975. Safety-Kleen distributes and collects two solvents: a mineral spirits solvent and an immersion cleaner. Prior to the spring of 1990, the immersion cleaner was a chlorinated solvent which contained methylene chloride, cresylic acid, and ortho-dichlorobenzene. During the spring of 1990, Safety-Kleen reformulated the immersion cleaner so that it no longer contains the above chemical in a concentration considered to be hazardous. However, in a recent letter from Safety-Kleen to DHS, Safety-Kleen stated that the reformulated immersion cleaner would be hazardous under the new TCLP regulations. Safety-Kleen is also allowed under their Interim Status Document (ISD) to accept dry cleaning wastes consisting mostly of perchloroethylene contaminated material. In addition, Safety-Kleen acts as a transfer station and accepts lacquer thinner, 1,1,1-trichloroethane (1,1,1-TCA), freon, and ethylene glycol which are stored for not more than 144 hours. A total of three SWMUs and one area of concern have been identified.

Release potentials of these units to environmental media were evaluated and segregated into four categories based on possibility of releases: low potential, medium potential, high potential, and documented releases. Potentials of these units for past releases are summarized in Table 1 and potentials for ongoing releases are summarized in Table 2.

Table 1

Summary of Potential for Past Releases from SWMUs

Unit	Description	Soil/ Groundwater	Surface Water	Air	Subsurface Gas
1	Drum Storage Area	Low	Low	Low	Low
2	Underground Storage Tank	Documented	Low	Low	Low
3	Return/Fill Shelter	Medium	Low	Medium	Low
Area of Concern					
1	Underground Clean Mineral Spirits Storage Tank	Documented	Low	Low	Low

Table 2

Summary of Potential for Ongoing Releases from SWMUs

Unit	Description	Soil/ Groundwater	Surface Water	Air	Subsurface Gas
1	Drum Storage Area	Low	Low	Low	Low
2	Underground Storage Tank	Low	Low	Low	Low
3	Return/Fill Shelter	Low	Low	Medium	Low
Area of Concern					
1	Underground Clean Mineral Spirits Storage Tank	Low	Low	Low	Low

Unit 2, the underground waste storage tank, and the Area of Concern, the underground clean mineral spirits storage tank, both have documented releases to soil and/or groundwater. Records from the Regional Water Quality Control Board (RWQCB), Alameda County Environmental Health, and Safety-Kleen show that releases from the underground storage tanks (Unit 2, AOC 1) have occurred.

The need for two separate tables, one for past releases and one for ongoing releases, is due to the fact that the facility underwent substantial modifications in June 1990. Past SWMUs were replaced with newer equipment and thus changed the release potentials of the units.

8.0 REFERENCES

1. Culp-Wesner-Culp (CWC), December 19, 1985, Submittal of Underground Tank Subsurface Investigation, Leak Monitoring, and Leak Response Plan for Safety-Kleen Corporation Oakland Service Facility.

2. Safety-Kleen Corporation, January 26, 1986, Storage Facility Permit Application.

3. Safety-Kleen Corporation, February 25, 1988, Field Spill Report Form.

4. Groundwater Technology, Incorporated, March 21, 1988, Proposal [for] Subsurface Contamination Assessment [for] Safety-Kleen Oakland Facility, 404 Market Street, Oakland, California.

5. Alameda County Environmental Health Department, June 18, 1988, Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report.

6. Alameda County Environmental Health Department, July 7, 1988, Hazardous Materials Release and Notification Report.

7. Safety-Kleen Corporation, July 28, 1988, Field Spill Report Form.

8. Safety-Kleen Corporation, September 9, 1988, Field Spill Report Form.

9. Safety-Kleen Corporation, October 24, 1988, Field Spill Report Form.

10. Safety-Kleen Corporation, November 8, 1988, Field Spill Report Form.

11. Safety-Kleen Corporation, November 10, 1989, Storage Facility Permit Application.

12. Groundwater Technology, Incorporated, June 15, 1990, Work Plan For Soil-Vent System and Recovery-Well Installation.

13. Safety-Kleen Corporation, June 20, 1990, Field Spill Report Form.

14. Groundwater Technology, Incorporated, July 12, 1990, Safety-Kleen, 404 Market Street, Oakland, Chronological Assessment Update.

15. Safety-Kleen Corporation, August 15, 1990, Response to Notice of Deficiency.

16. Telephone conversation between Lewis Jones, Wastewater Control Representative, East Bay Municipal Utility District, and Alfred Wong, Department of Health Services, September 18, 1990.

17. Telephone conversation between Bryan Sussman, Meteorologist, KPIX, Channel 5 and Alfred Wong, Department of Health Services, September 24, 1990.

18. Graef, Anhalt, Schloemer & Associates Inc., Undated, Fault Analysis of the Safety-Kleen Site, 404 Market Street, Oakland, California.

APPENDIX A

VISUAL SITE INSPECTION PHOTOGRAPHS

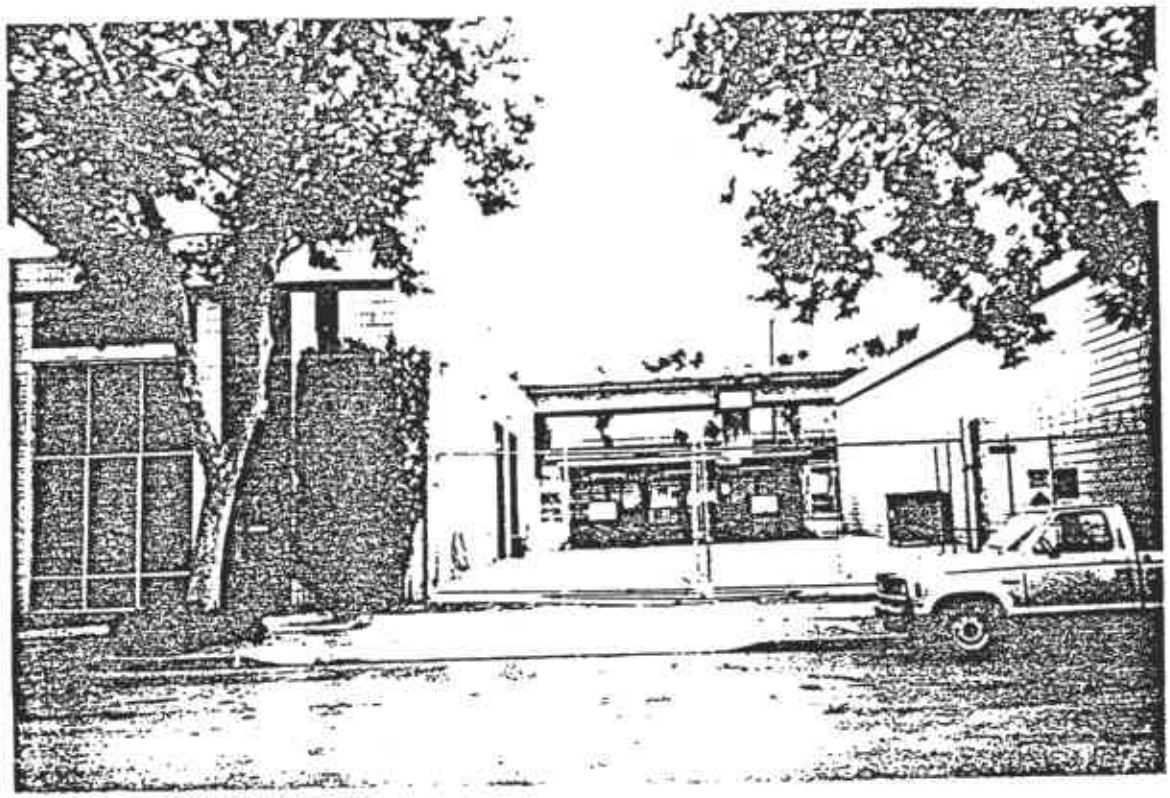


Photo 1 - Safety-Kleen Oakland facility.

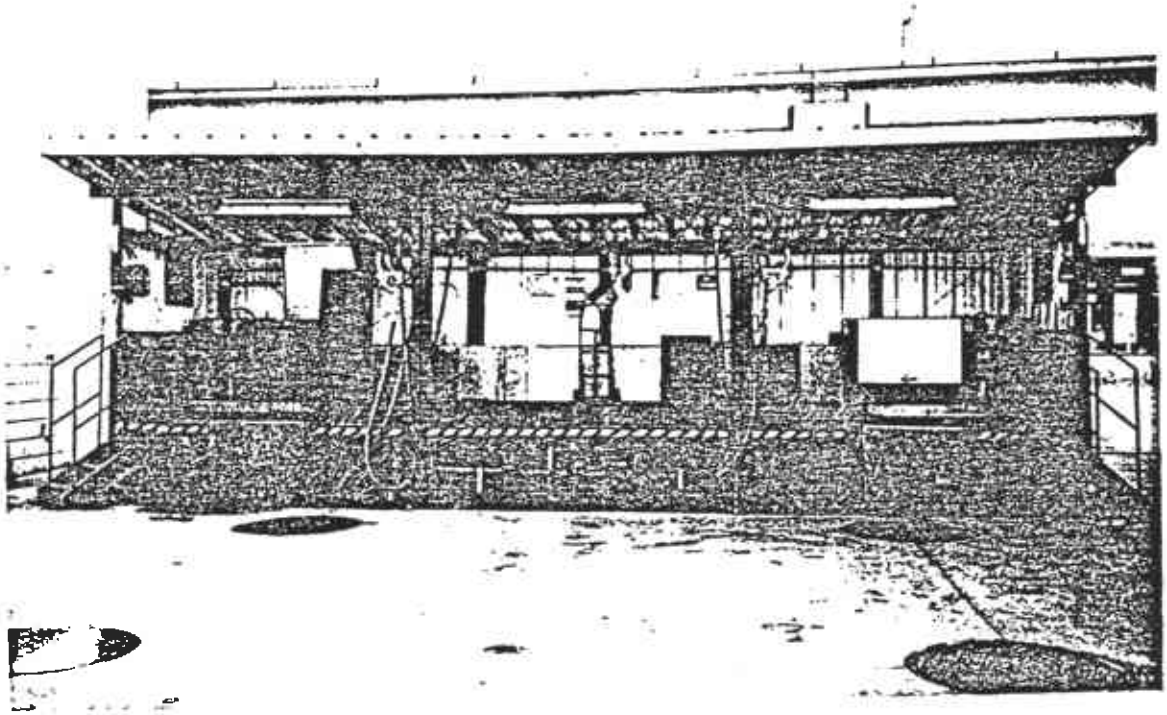


Photo 2 - Return/fill shelter. Drum washers are at each end of the shelter.

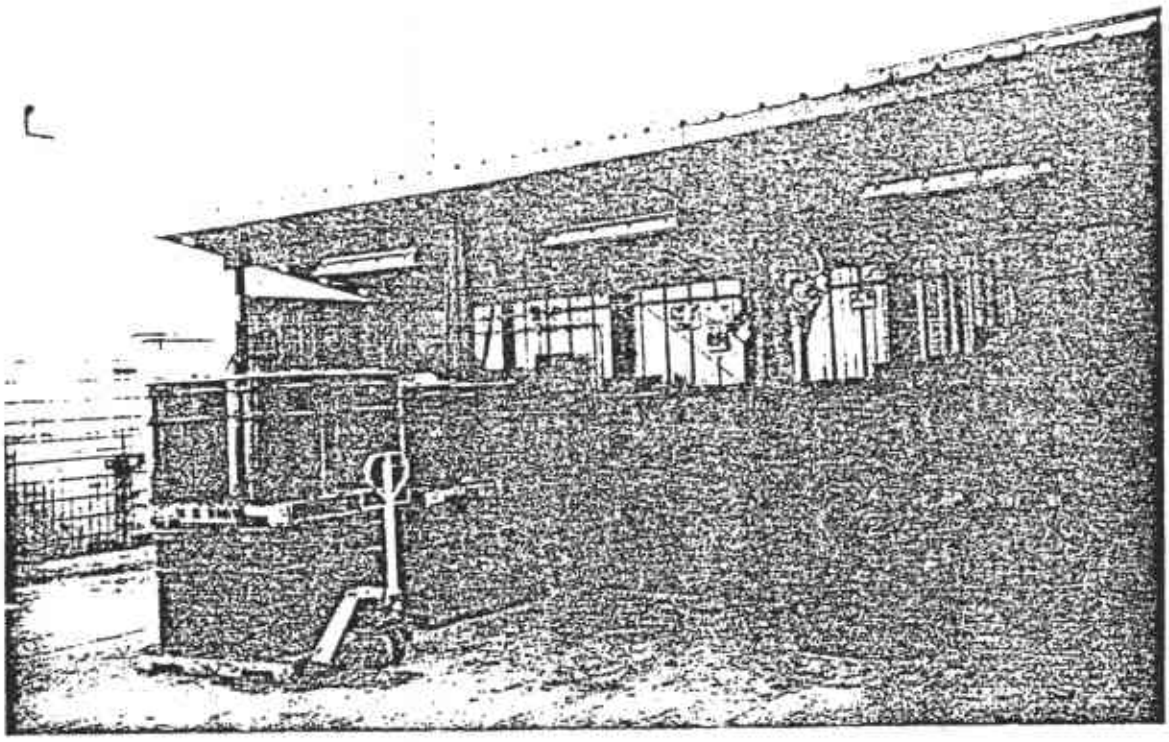


Photo 3 - Return/fills shelter with drums of used mineral spirits waiting to be poured into drum washers.

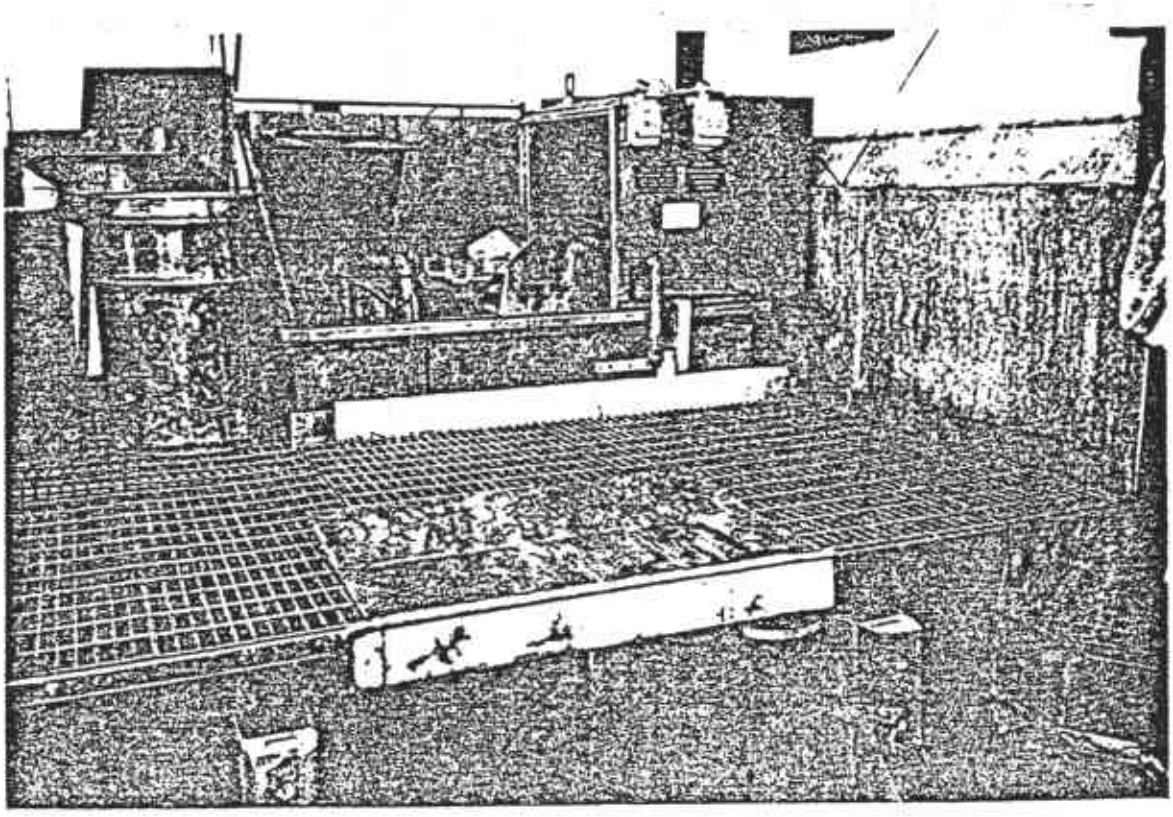


Photo 4 - Drum washer at the right end of the shelter.

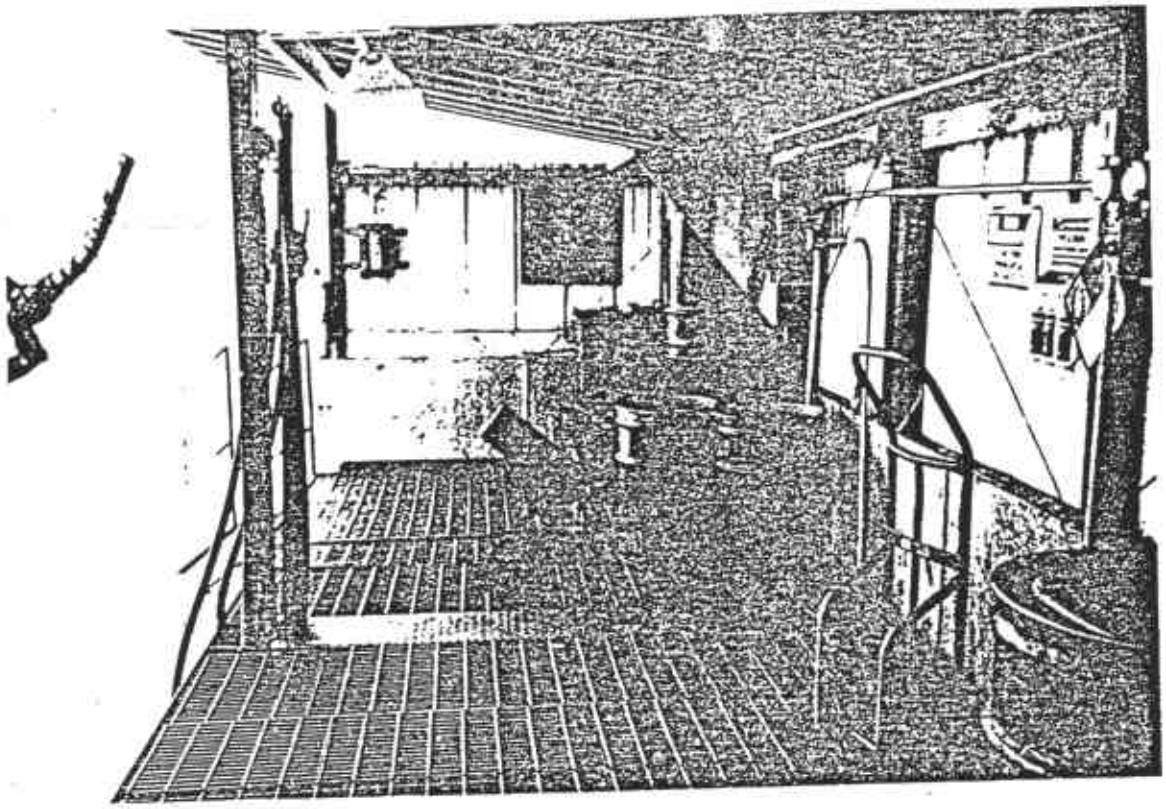


Photo 5 - Drum washer at left end of the shelter.

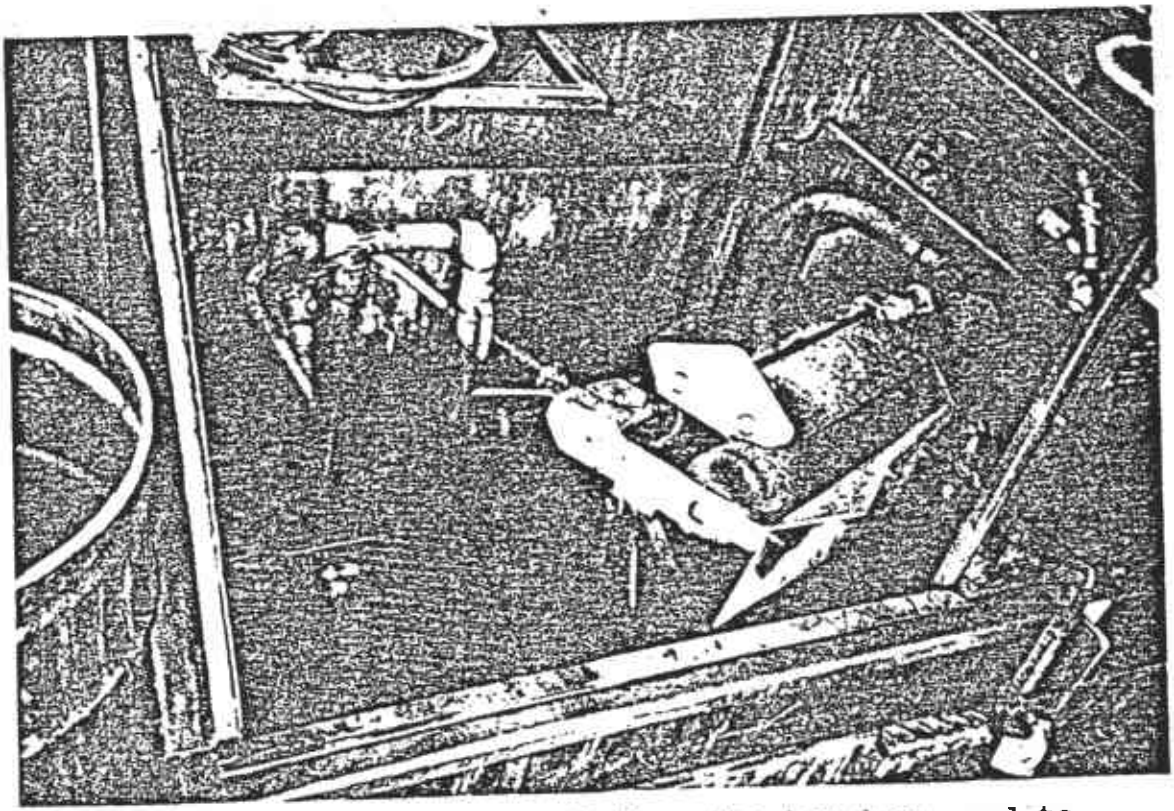


Photo 6 - Drum washer. Notice the brushes used to clean drums and the nozzle that sprays a stream of clean mineral spirits. Used mineral spirits flow through the metal grating.

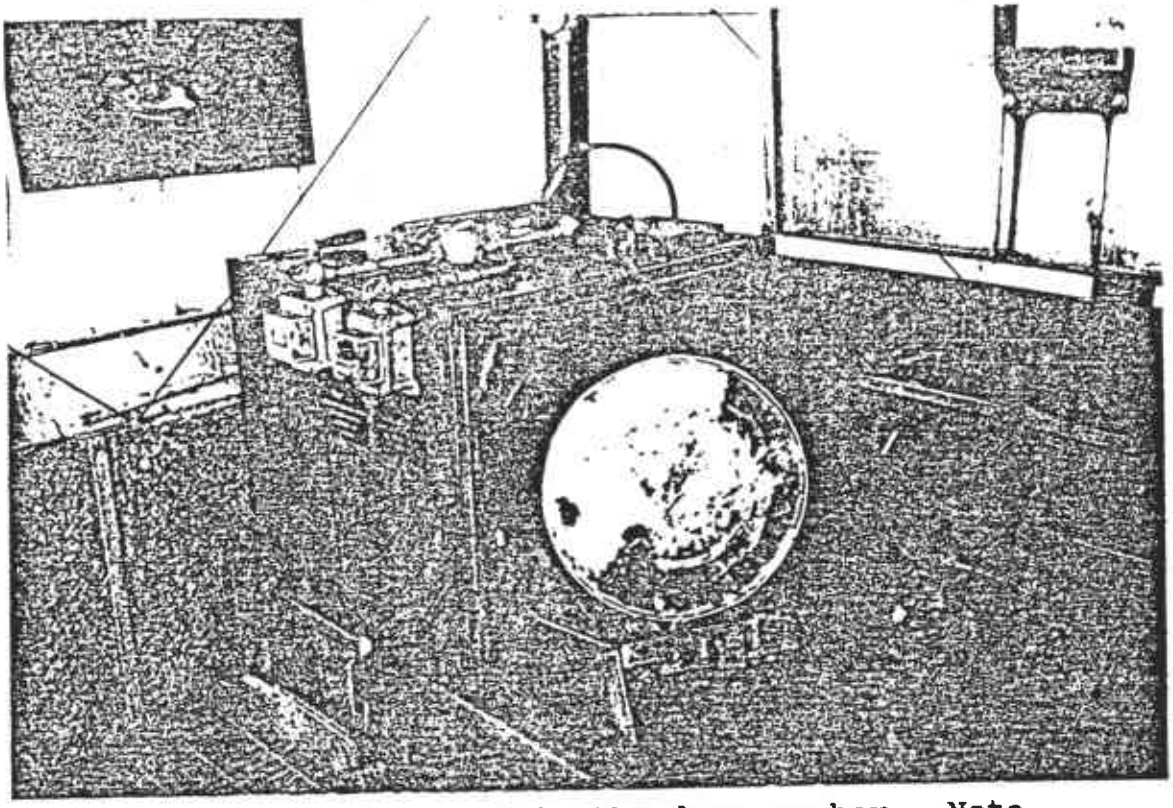


Photo 7 - Drum seated in the drum washer. Note splashguard on the left side of shelter.

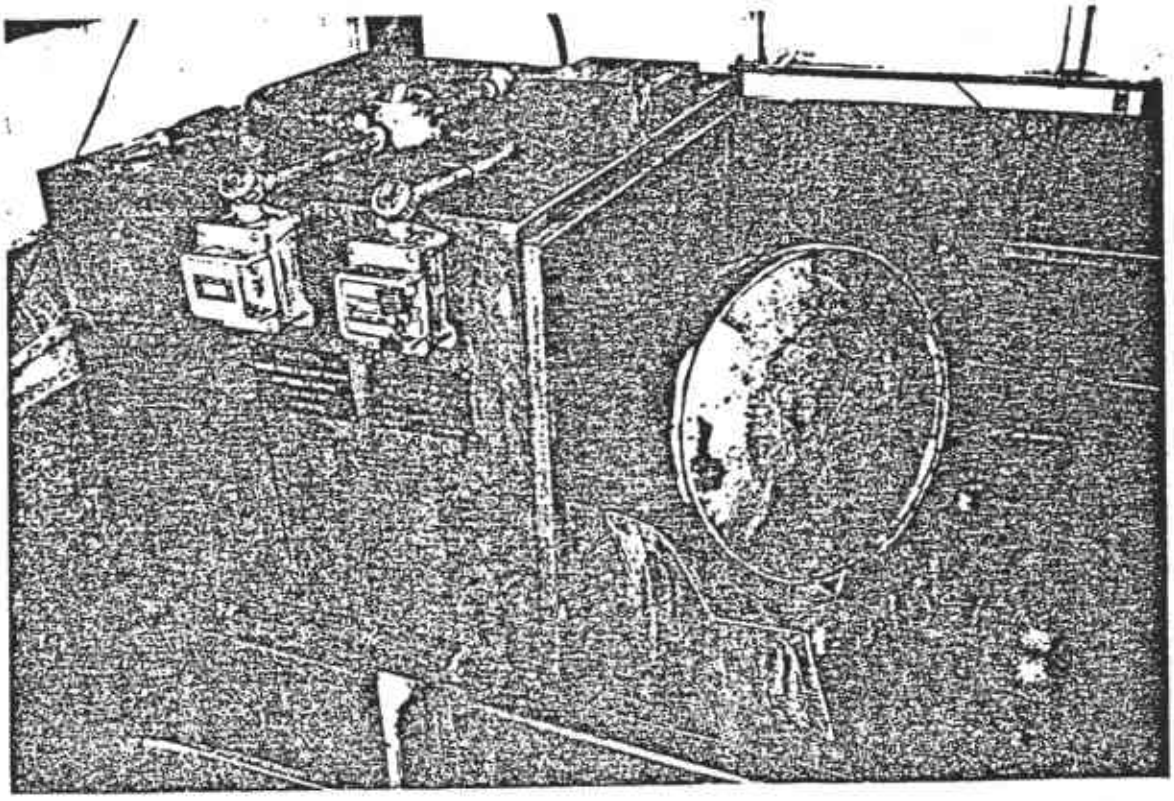


Photo 8 - Drum seated in drum washer. Brushes at the bottom right are shown scrubbing exterior of drum.

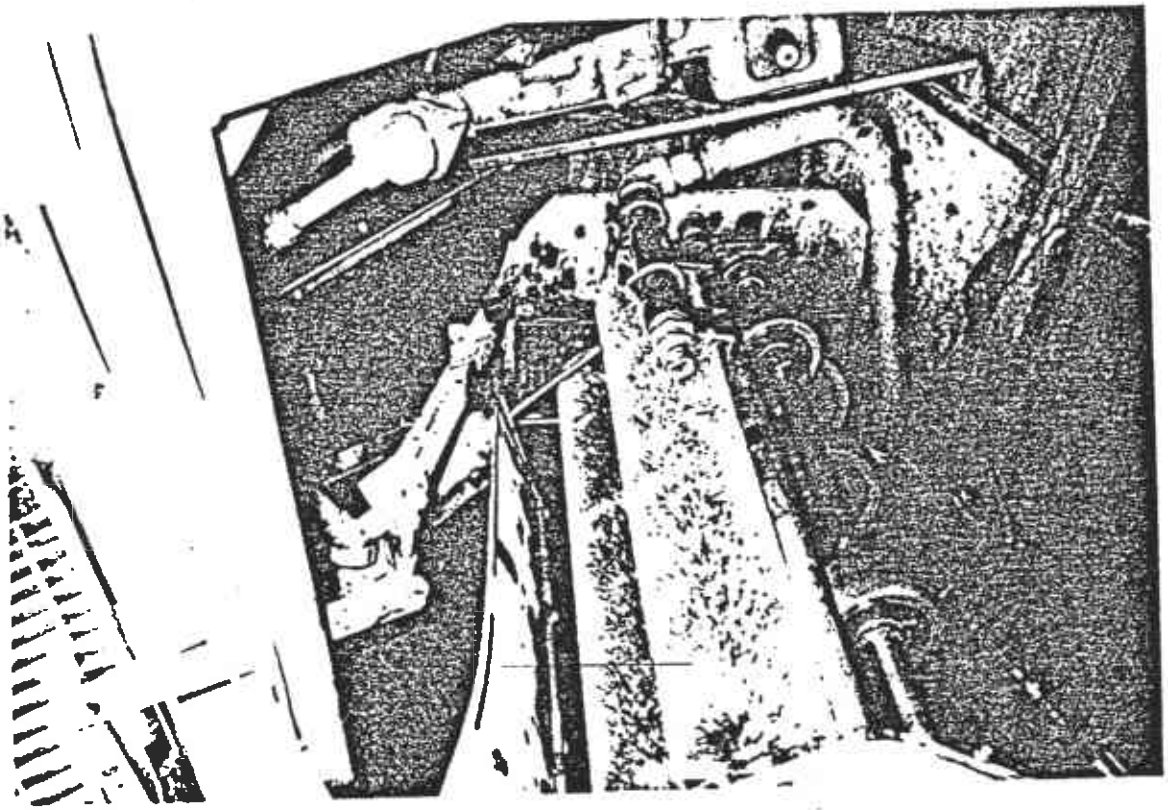


Photo 9 - Mechanics of the drum washer. Diagonal bar at the end of brushes is a fail-safe device which prevents drum washer from operating if no drum is in place.

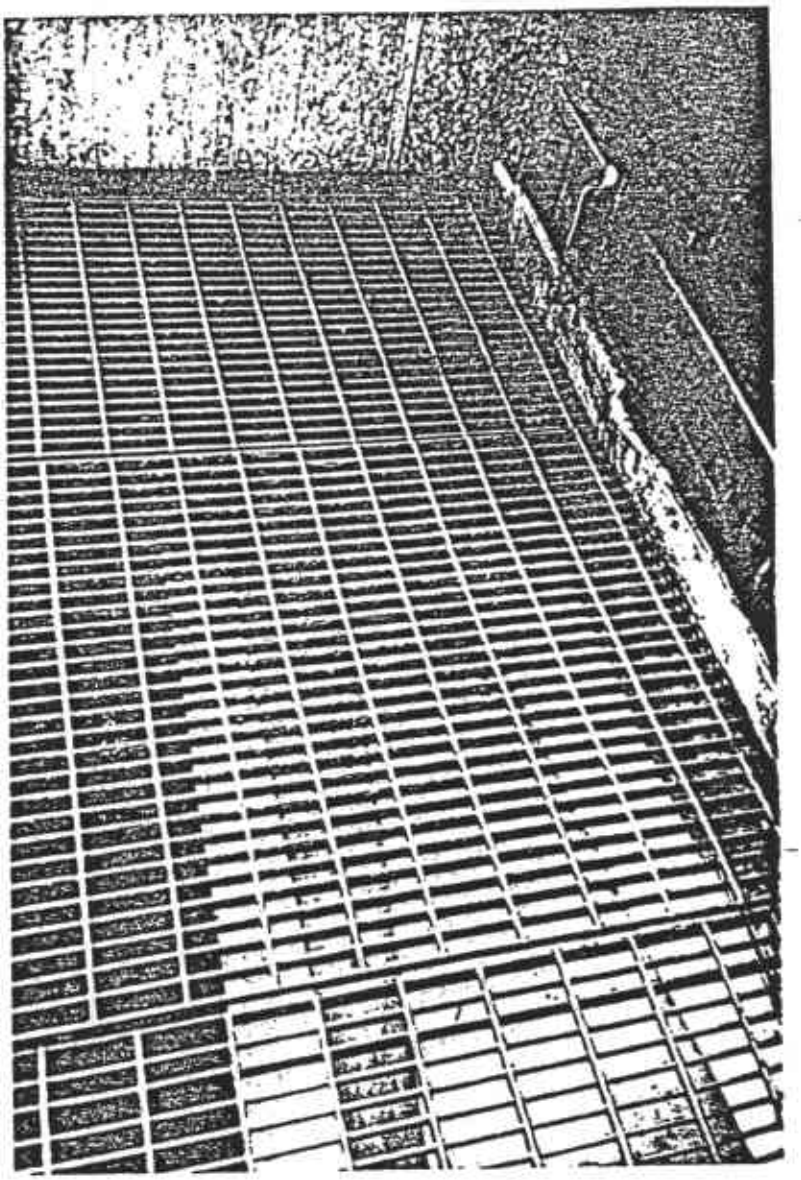


Photo 10 - Floor of return/fill shelter. Notice catch basin underneath grating.

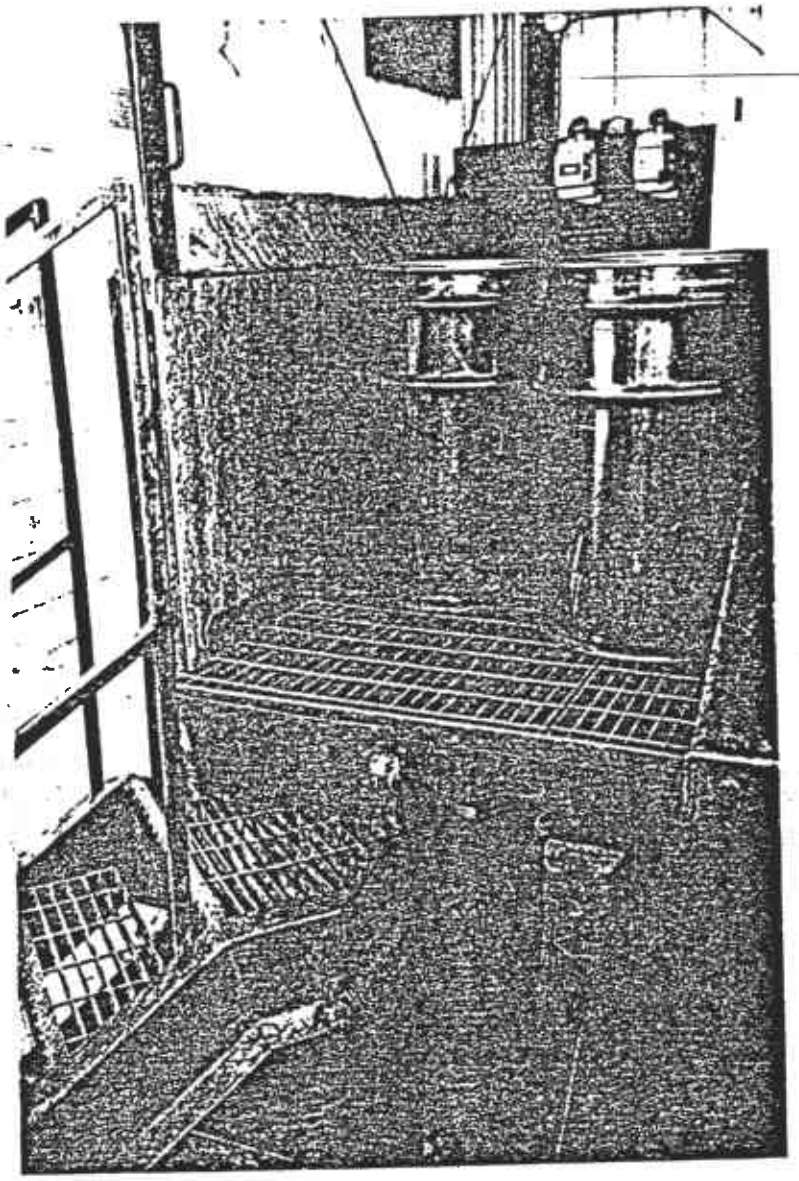


Photo 11 - Splashguard in the return/fill shelter.

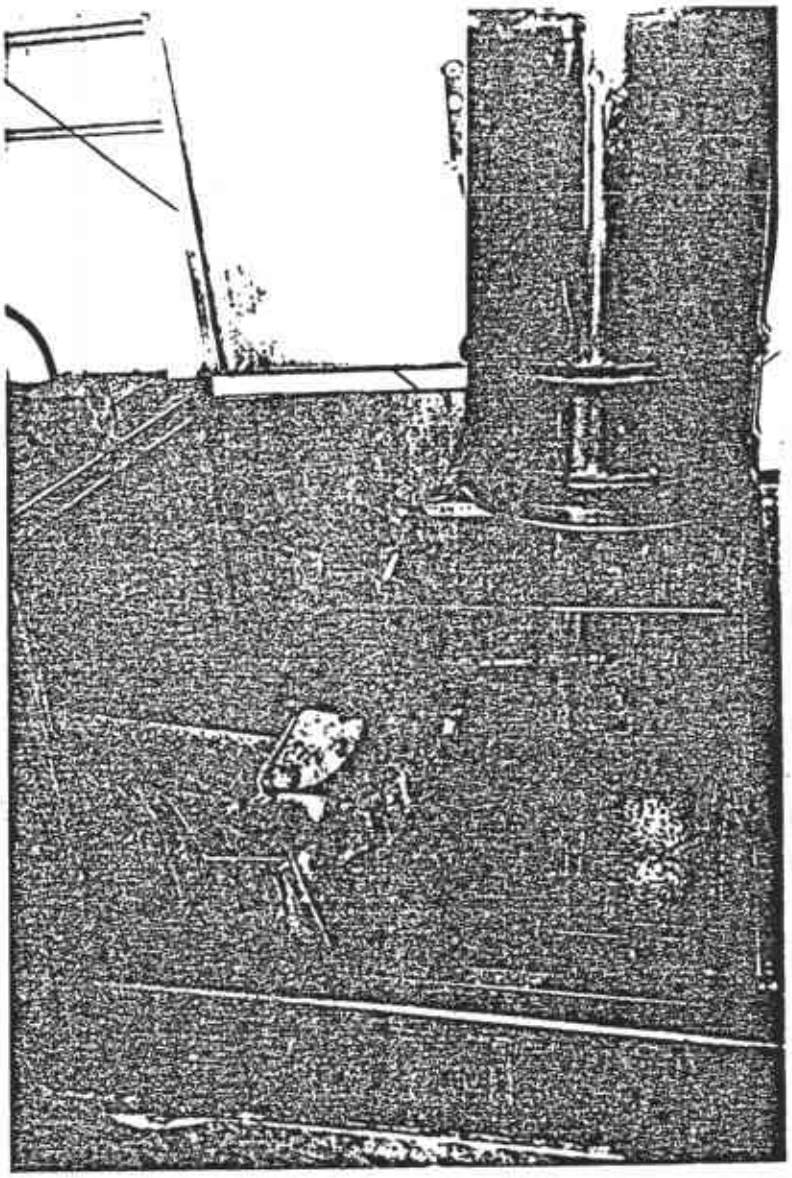


Photo 12 - After drums are cleaned, they are turned upside down to allow remaining liquid to drain.

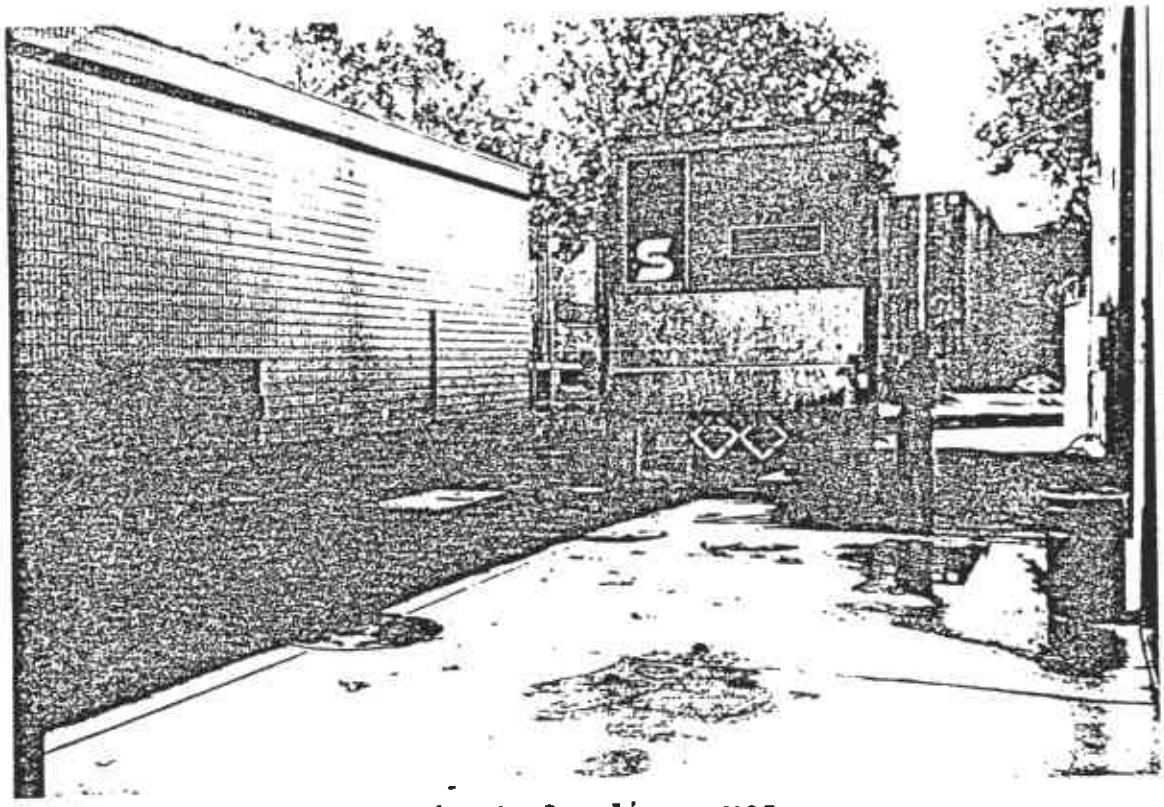


Photo 13 - Loading/unloading area.

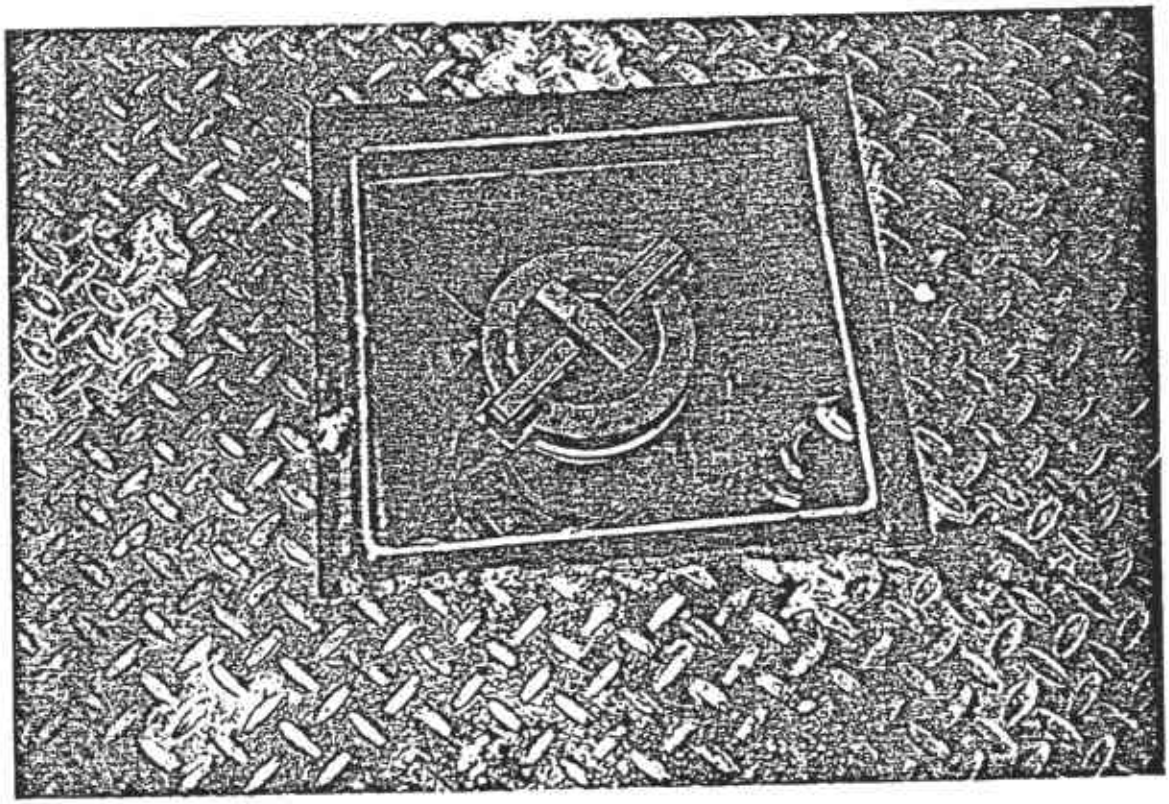


Photo 14 - Port use to remove waste from underground tank. Liquid shown is water used to hose down the facility.

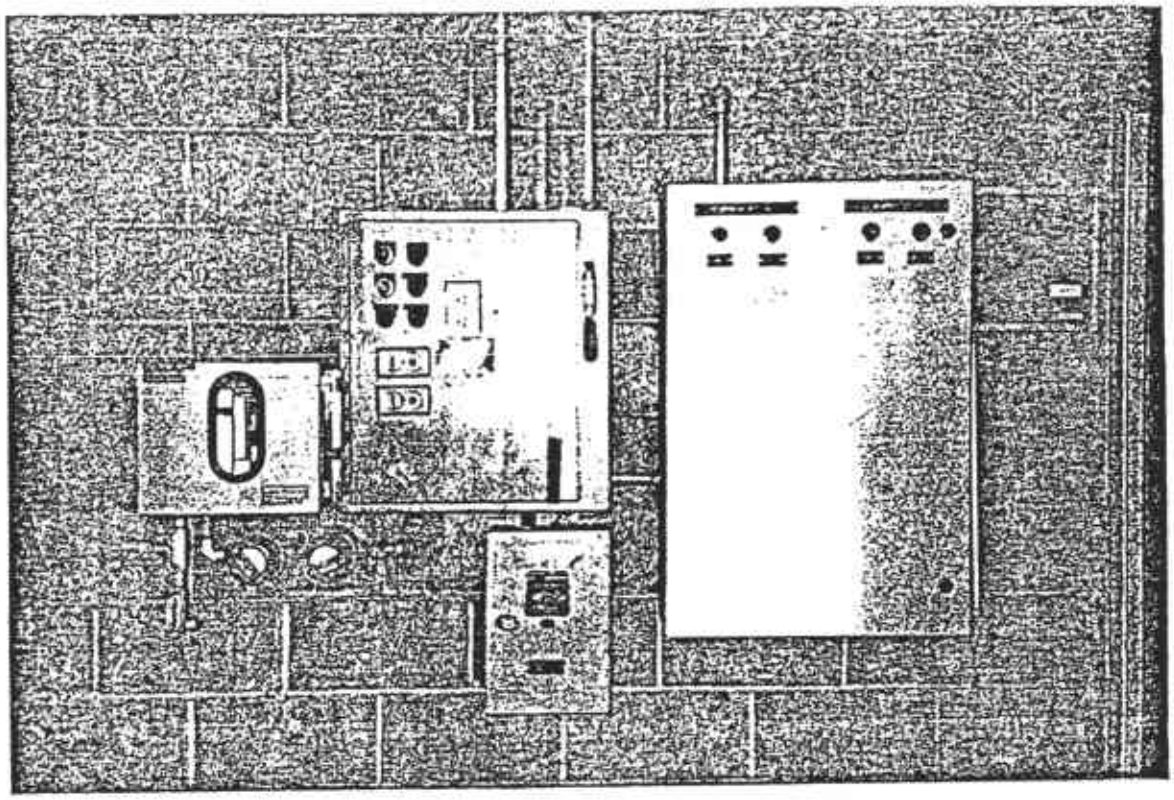


Photo 15 - High level alarm control panel.

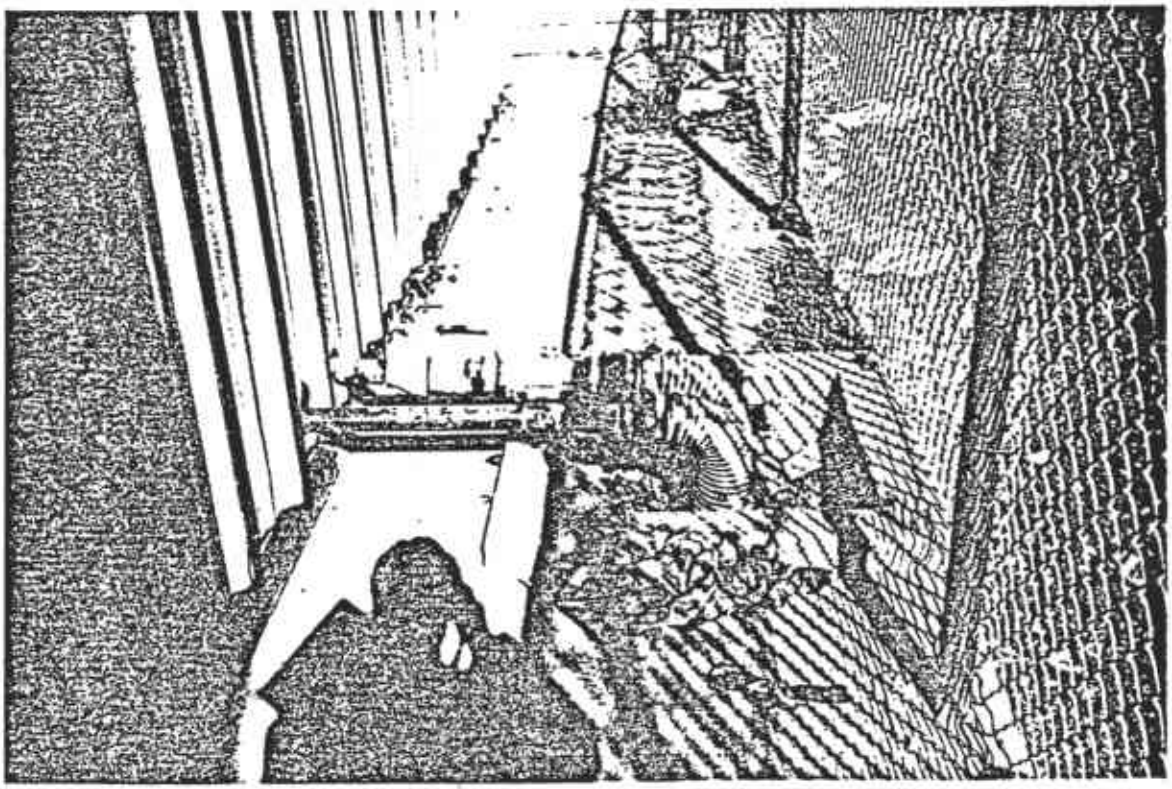


Photo 16 - Piping in back of the return/fill shelter used to carry clean mineral. Note no secondary containment for portions of piping.

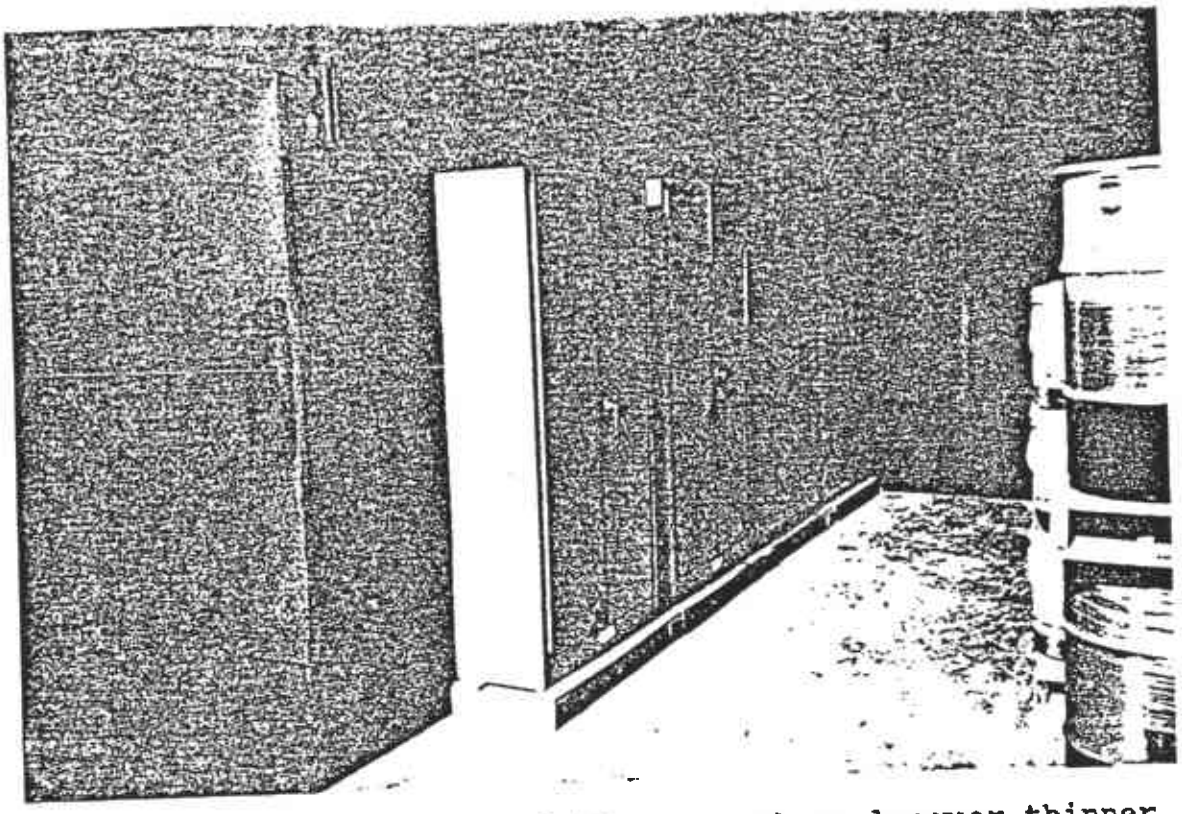


Photo 17 - Lockers used to store clean lacquer thinner.

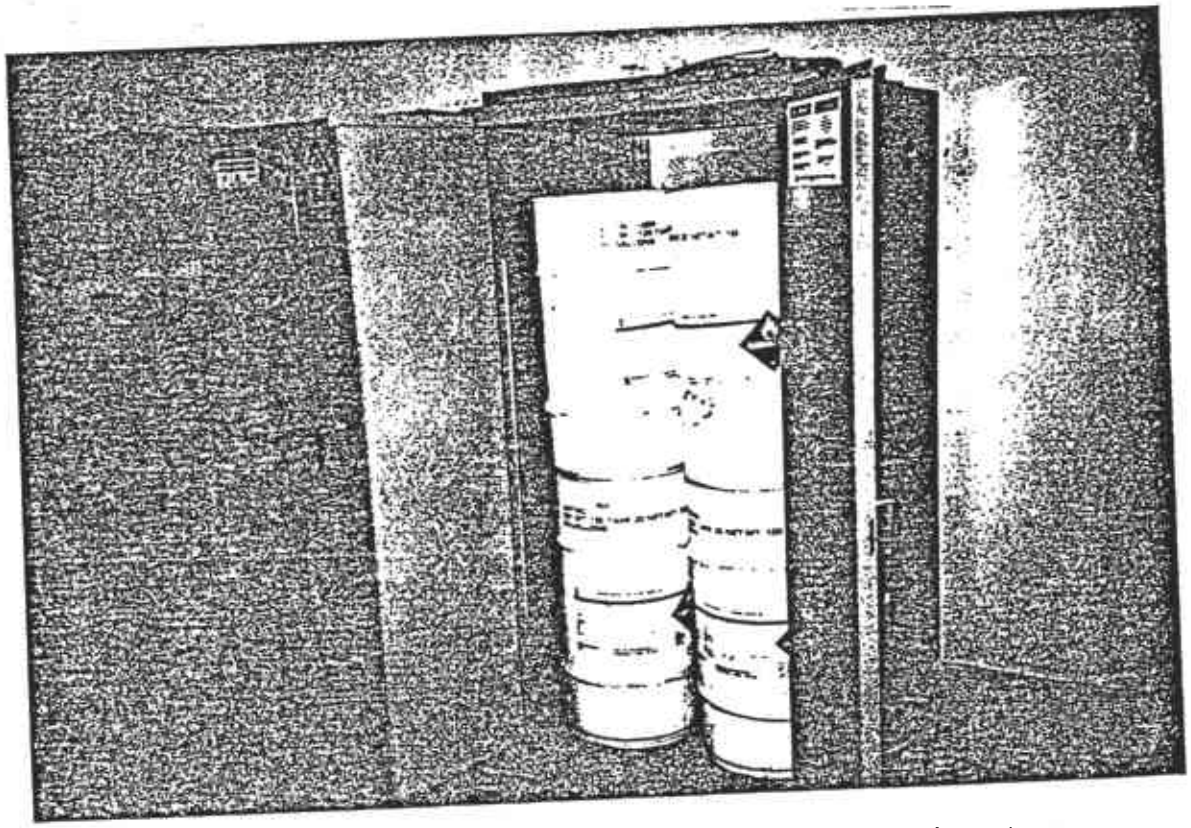


Photo 18 - Drums of clean lacquer thinner in storage locker.

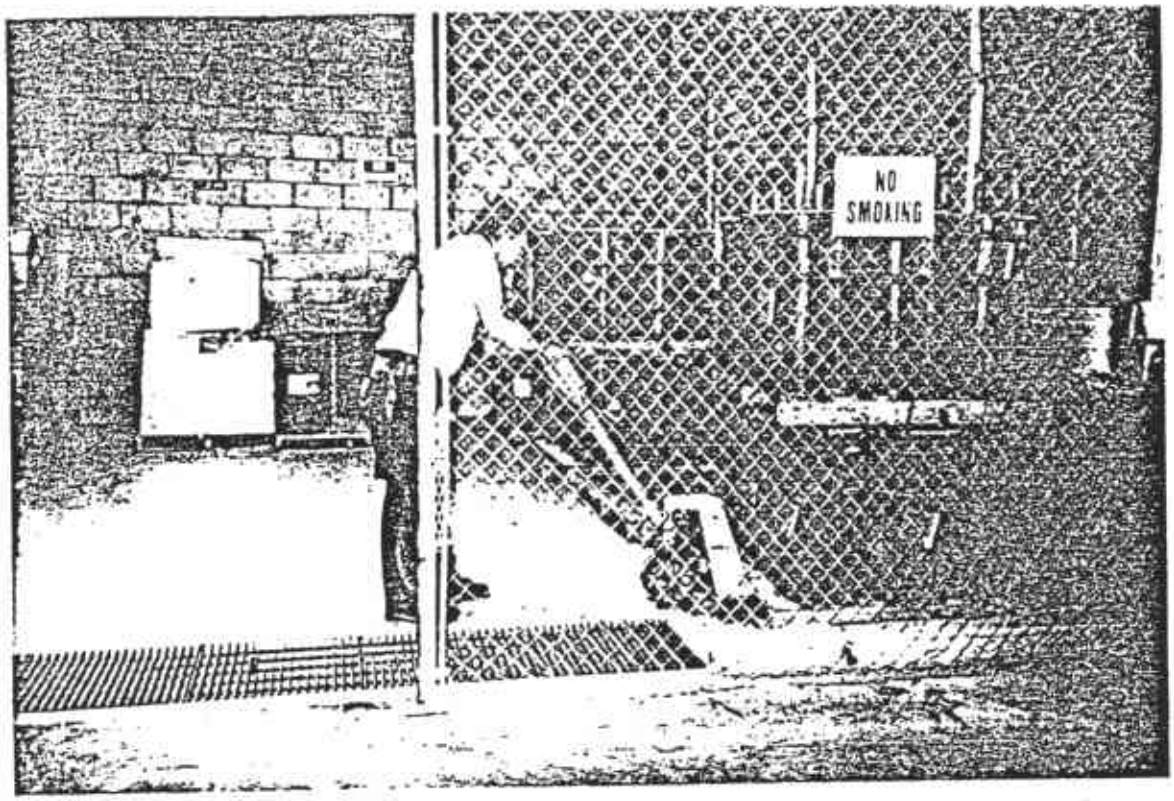


Photo 19 - East drum storage area. Hazardous waste is stored on the right side and virgin material on the left side. Dumpster mud is stored in red drums and new immersion cleaner in red/gray drums. Grating for sump is shown in front.

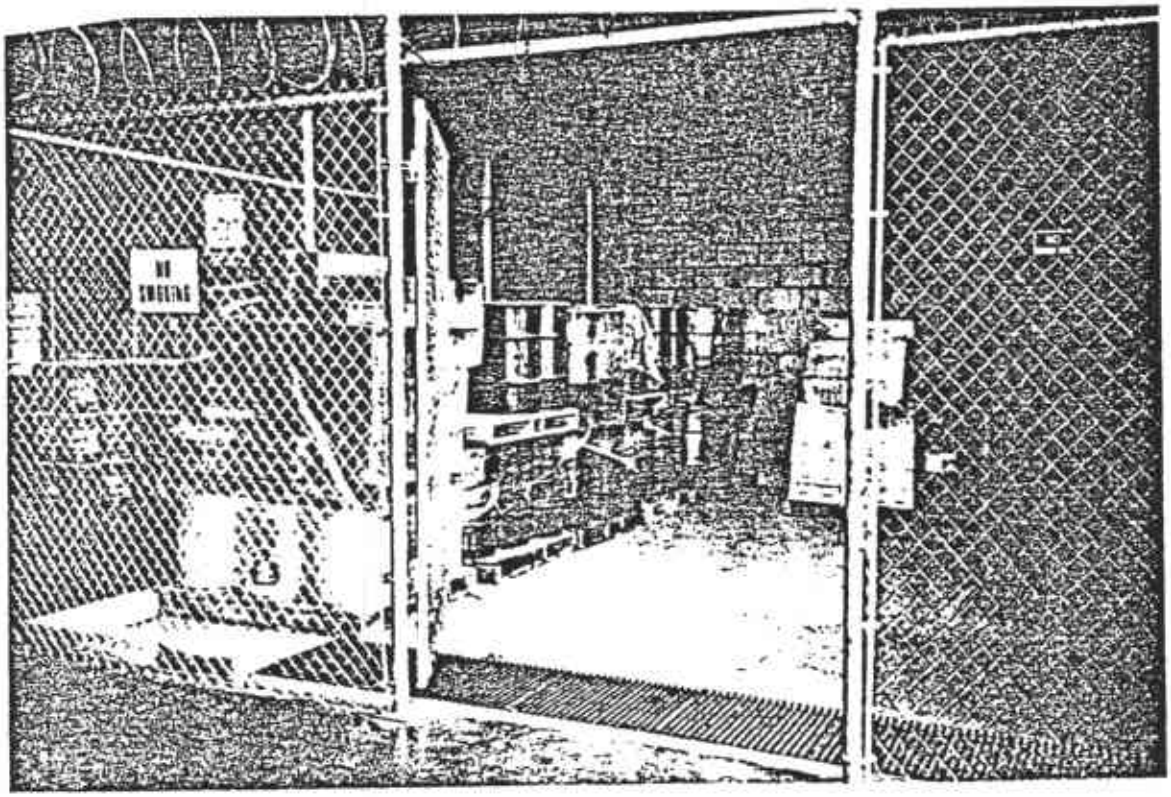


Photo 20 - Left side of east drum storage area. Clean immersion cleaner is shown in red/gray drums.

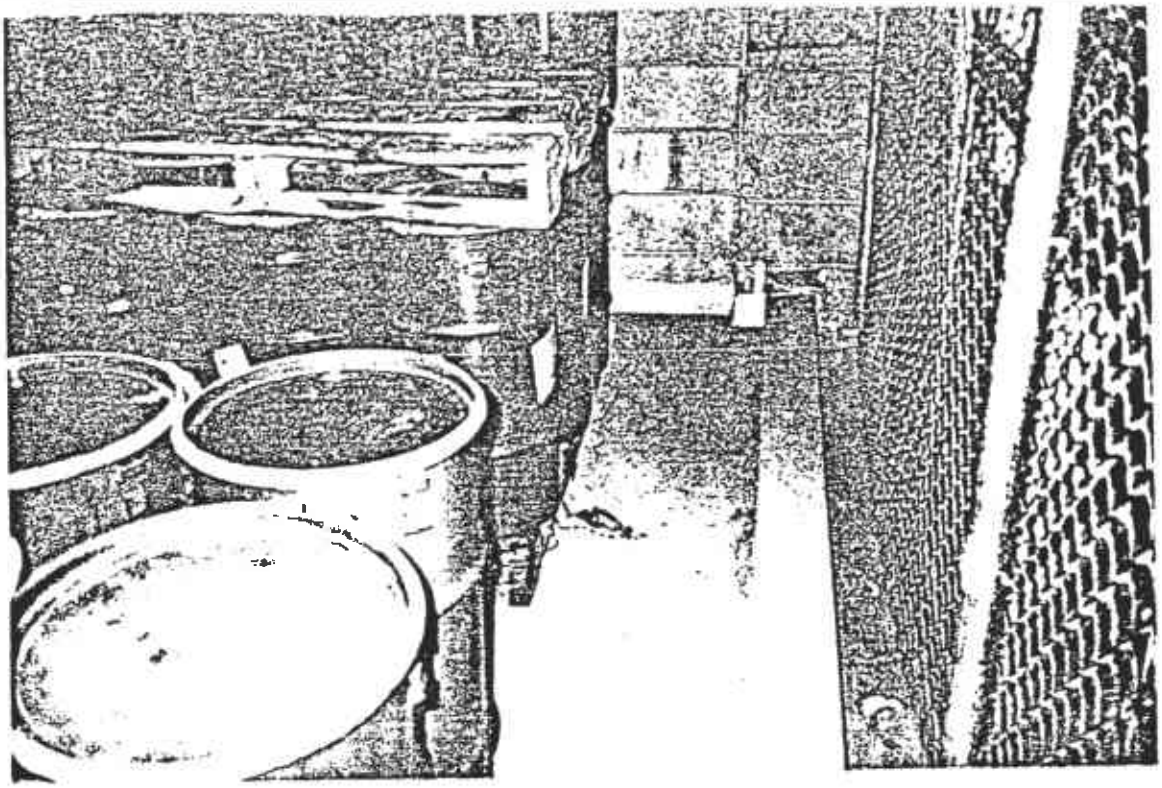


Photo 21 - Berms used for secondary containment in east drum storage area. Gray drums contain old immersion cleaner.

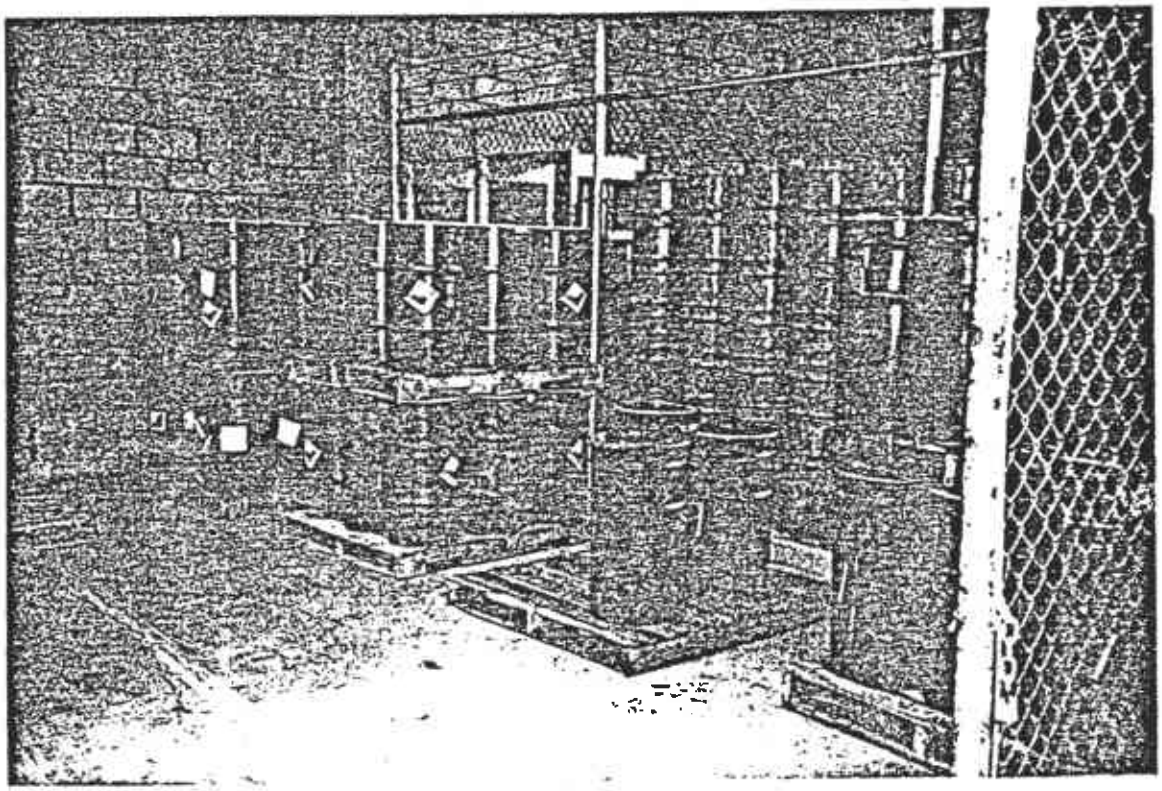


Photo 22 - Drums stored in east storage area. Hairline cracks are covered with epoxy coating.

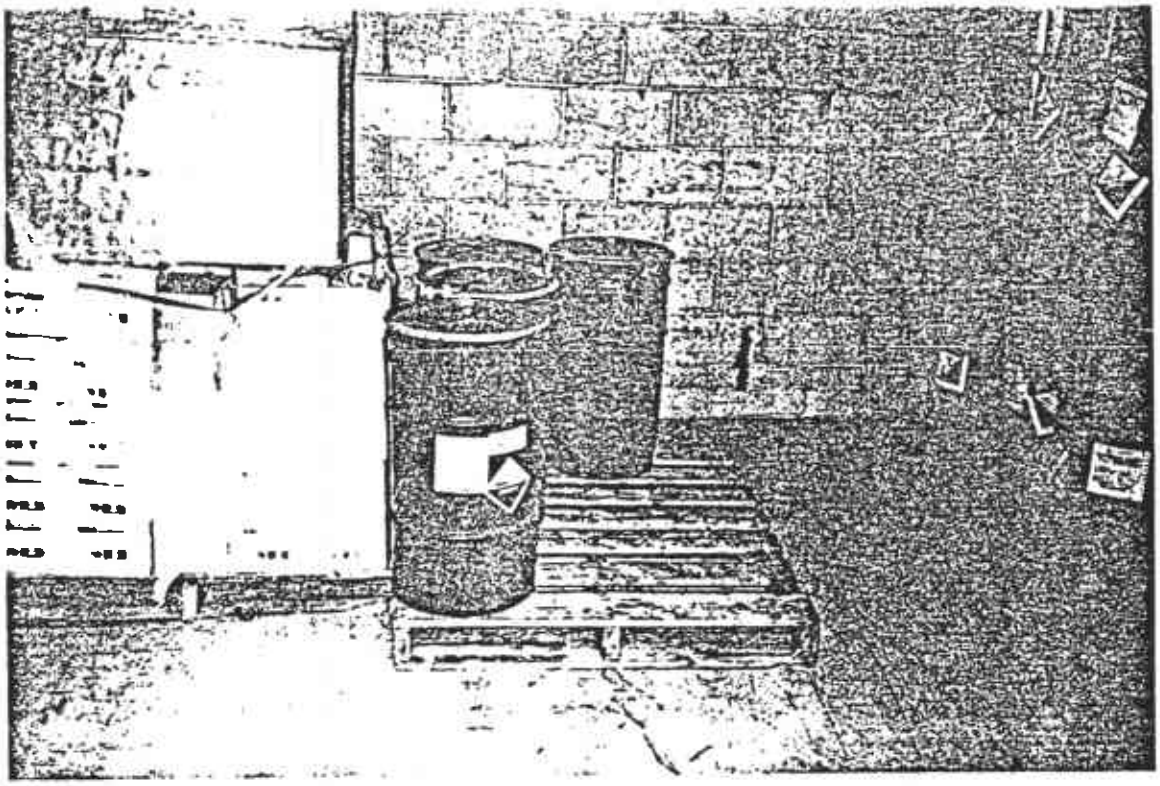


Photo 23 - West drum storage area. Note bare patch of concrete behind center red drum.

Photo 24 - Bare patch of concrete in west drum storage area. Probable cause is spill or leak from drum of new immersion cleaner which completely dissolves the epoxy coating.

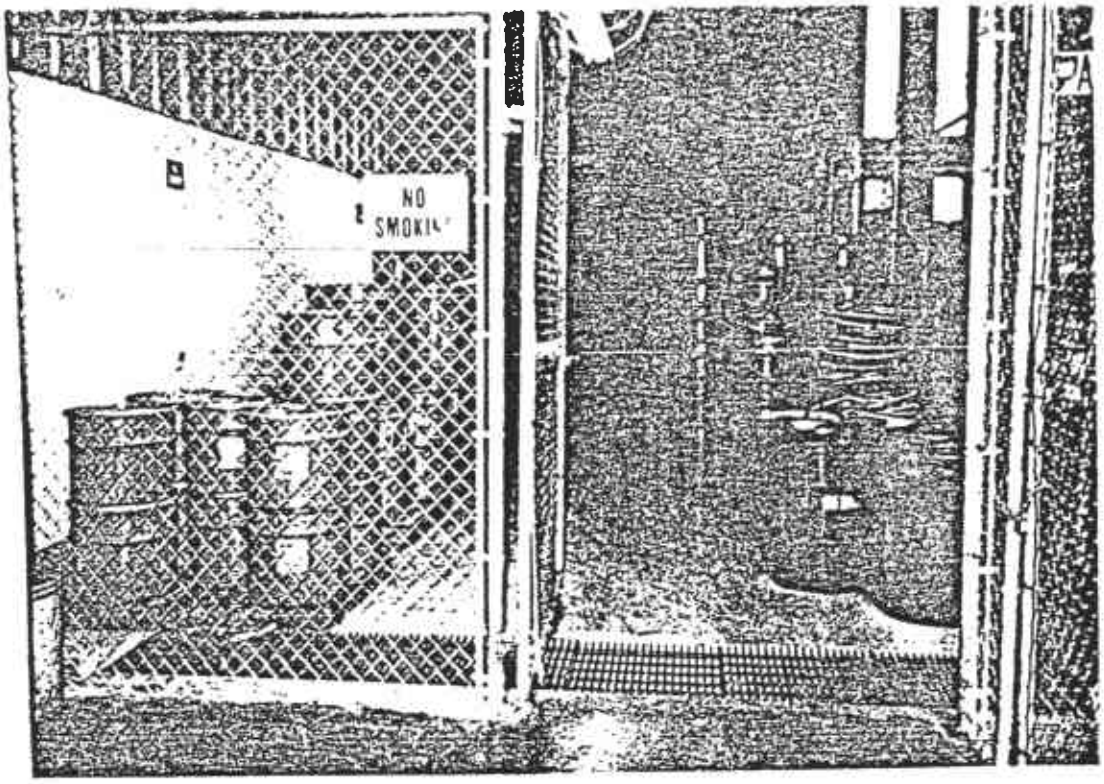


Photo 25 - West drum storage area for dry cleaning waste. Dry cleaning waste is stored in blue or black drums.

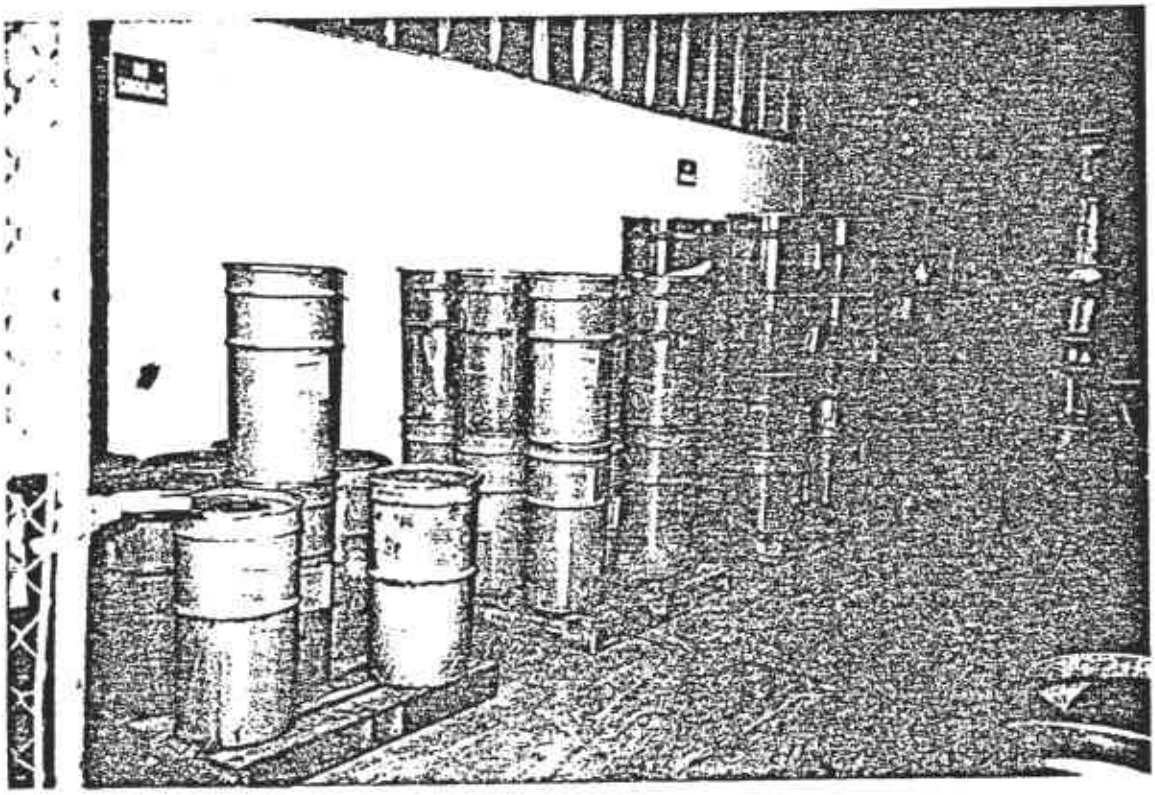


Photo 26 - Drums of dry cleaning waste stored in blue or black drums in the west drum storage area.

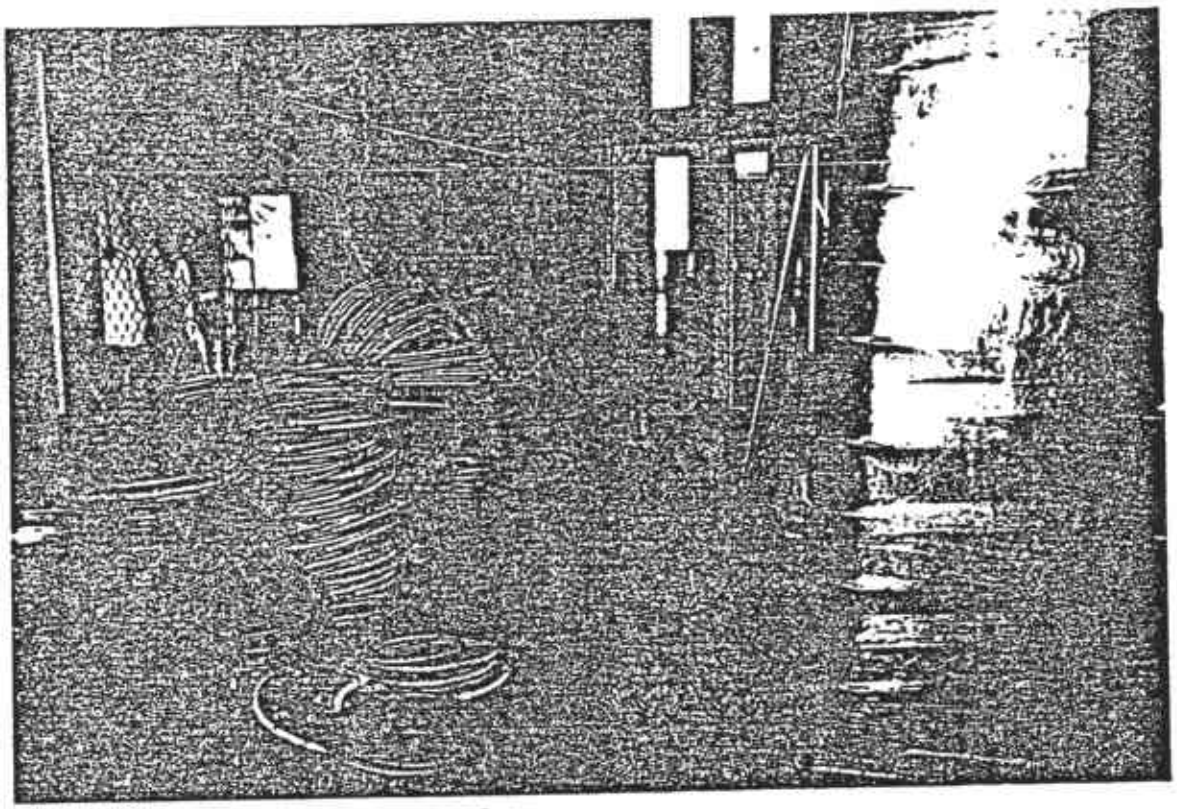


Photo 27 - Maintenance supply storage area adjacent to west drum storage area.

APPENDIX B-1

VISUAL SITE INSPECTION FIELD NOTES

9/13/90

Safety-Kleen Oakland VSI

- Need
  - History of facility
  - Tank Removal Information
  - Spill Report forms
  - Renovations
  - OtLa Permits

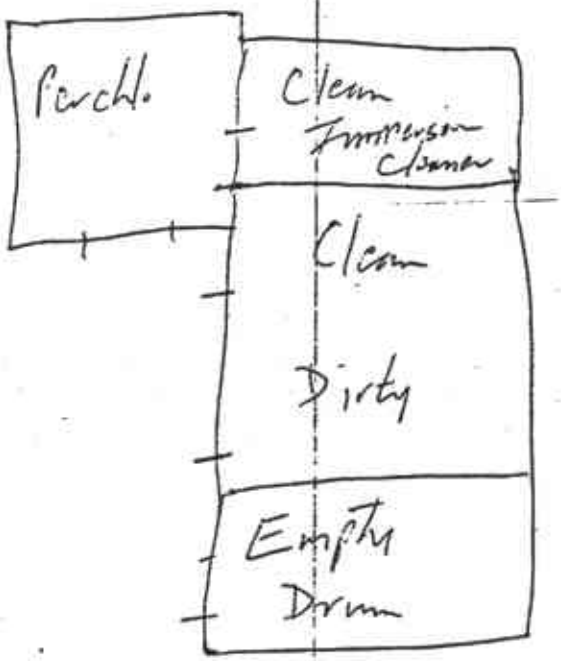
- Date of Startup Operation - 2/1/75
  Bedford property owned property before
  SK purchased facility 5/9/90

- In process of modification of drum storage area.

- Tank removal done in 6/9 - finished 7/11/90

- Before 3 tank
  - 2 - 6000 waste
  - 1 - 10000 Virgin
- Now 2 tanks
  - 1 12K waste
  - 1 12K Virgin

Person present: Alfred Wong, DHS
Guillermo Montes, DHS
Jim Knowns, SK
William Spencer, SK
Bob Clements, SK



Report of fully analysis for
tank removal sent to DHS

Dirt was disposed of offsite
for incineration

No other permits

No other major modifications since 1981

Waste Received
MS
Perchloroethylene
IMMERSION CLEANER
Lacqua Thinner } F Status ONLY
Freon
1,1,1 TCA
ethylene glycol

APPENDIX B-2

RECORD OF INSPECTION FOR VISUAL SITE INSPECTION PERFORMED SEPTEMBER 13, 1990

Record of Inspection
Safety-Kleen Oakland Facility
September 13, 1990

Guillermo Montes and I went to the Safety-Kleen Oakland on September 13, 1990 to perform a Visual Site Inspection for the RCRA Facility Assessment (RFA) that I was conducting on the facility. We got to the facility approximately at 9:00 a.m. The weather was mostly sunny. We met with Jim Knous, the facility manager, and were then introduced to Bill Spencer, the Regional Manager for Safety-Kleen.

I explained to Mr. Knous and Mr. Spencer that we were there to perform a visual site inspection (VSI) and that the VSI was necessary for the RFA that I was conducting as part of the permitting process for his facility. Neither Mr. Knous nor Mr. Spencer had any question about the RFA or the permitting. I told them that I had identified three solid waste management units and one area of concern at the facility. The solid waste management unit were the fill/return shed, the underground storage tank, and the drum storage area and that the area of concern was the underground virgin product storage tank.

I then asked Mr. Knous about the history of this facility and if he knew what was here before Safety-Kleen. Mr. Knous said that Safety-Kleen started operation here on 2/1/75 and he had no idea what was there before Safety-Kleen. He said that I should call Bedford Properties, the company that owned the property before Safety-Kleen purchased it on 5/9/90. Mr. Knous said that he would provide me with Bedford Properties phone number.

Next, I asked if there were any major modifications to the facility since 1981 and he said no, but they were in the process of modifying the facility. Mr. Knous said that they were going to enlarge the drum storage area and expand the facility to include the vacant lot adjacent to it. The adjacent lot would be used for parking. The renovation are to be completed by January 1991.

I then asked Mr. Knous about the tank removal and replacement that was done during the summer. He said that the tanks would removed during June, 1990 and that the tank removal was completed on 7/11/90. Before there were 3 tanks: two 6,000-gallon waste storage tanks and one 10,000-gallon virgin mineral spirits tank. These tanks were replaced with two 12,000-gallon tanks, one for clean mineral spirits and one for dirty mineral spirits. I asked Mr. Knous what happened to the soil that was excavated and he said that some company in Richmond, "something Foundry" picked it up and shipped it off to an incinerator back east. He said that

samples of the soil were taken and a full analysis was to be sent to me by the end of the month.

We then discussed the waste that Safety-Kleen collected. I told Mr. Knous that I know Safety-Kleen handles mineral spirits wastes, perchloroethylene, and immersion cleaner and asked him if the facility took in any other waste besides these, even on as only a transfer station. He said that they receive lacquer thinner, freon, 1,1,1-TCA and ethylene glycol, but these waste never stay in the facility for longer than 6 days. Most of these waste usually leave the facility the same day that it arrives.

I asked him if he had any other permits from any other regulatory agencies and he said no. I asked him if he had a permit from the Bay Area Air Quality Management District for the barrel washer and he said that he wasn't aware that he needed one.

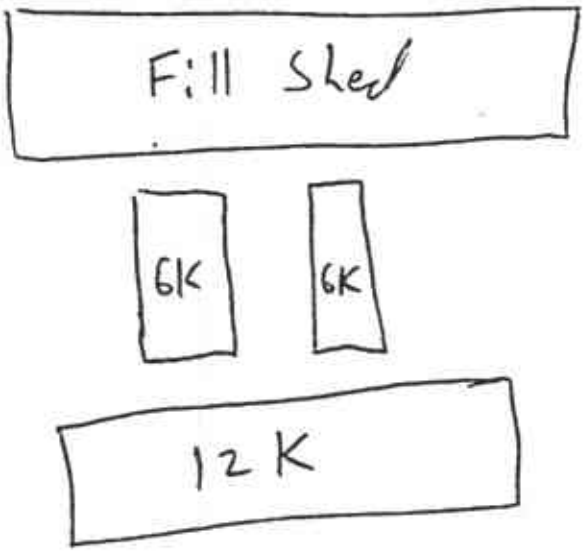
I next asked to see the spill report forms. Mr. Knous brought them in. I examined them and asked for copies of any evidence of spills that occurred at the facility. I noticed that all of the spills were caused by drums tipping over and there was no mention of any releases caused by the underground storage tank overfilling. The copies of the spill report forms are attached.

I told him that I wanted to see the SWMUs. The first SWMU inspected was the return/fill shelter. It was located outside the warehouse next to the loading/unloading area. When we walked outside, we noticed some workers hosing down the area. When I asked Mr. Knous about this, he said that it was to get rid of the leaves that always blow into the facility. The water ran into the sewer which I noticed to be clogged. No samples were taken.

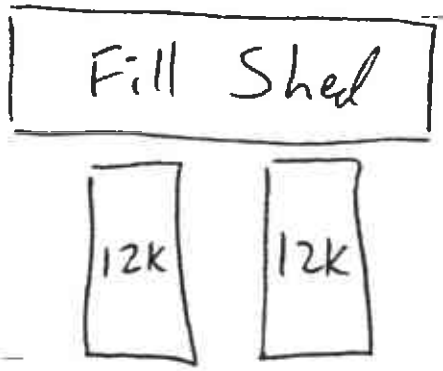
I told Mr. Knous that I knew that they had replaced the wet dumpster with a barrel washer and if they were planning to incorporate that information into the Part B. He said that Jane Meyer of their Sacramento office was working on that. I asked Mr. Knous if he could explain how the drum washer worked. He did.

I asked him if we can see the machine worked. He then called for Bob Clements, the Branch Facility Manager. Mr. Clements put a drum on the machine and started it. The drum spun around and the brushes cleaned the outside and inside of the drum. Very little splashing occurred as a result of this operation. I told him that on a previous inspection, that Cliff Yount of SEU had a concern about the drum washer operating without a drum seated in the device. Mr. Clements explained that they had added a fail-safe mechanism that prevent the drum washer from working unless there was a drum there. The mechanism did work. The drum washer didn't work unless a drum was properly seated in the washer. I also noticed a spill-catch basin beneath the floor of the shelter. He said that they put this in to catch anything that were to spill and the spill material would then go into the tank.

I then proceeded to where the underground storage tanks were. Since the tanks were underground, there wasn't very much to see. I asked Mr. Knous about the orientation of the tank. He told me that the tanks used to be as follows:



Now, the tanks were in the following orientation:



I took a look around the surface above the underground tanks. No cracks were visible and with the washing that they had done, it was very clean. I asked to look at one of the filling port to the tanks and Mr. Knous showed me one of them. It had liquid in it which was probably water from the earlier washing. I asked Mr. Knous how he got the liquid out. He pulled on a chain which opened a drain. The liquid ran into the underground storage tanks. He said that the tanks are cleaned every year and that amount of liquid would have no effect on the waste.

We next went to the drum storage area. The drum storage area was located inside the warehouse. Mr. Knous explained how the drum storage area was to be expanded so it run from one side of the warehouse to the other side. I looked around the mineral spirits dumpster mud and immersion cleaner storage area. It didn't have any major cracks in the floor. The floor was coated with an epoxy. I noticed that there were several patches of bare concrete. I told Mr. Knous that based on previous experience with their facility in Rohnert Park, that the bare patches were probably caused by the new immersion cleaner. Mr. Knous said that he had no knowledge of what could have caused the bare patches.

I asked Mr. Knous if he knew if there were any incompatibilities between the old immersion cleaner and the new reformulated immersion cleaner. He said that he didn't know of any incompatibilities between them and the only reason that they keep them in separate drums was because the old immersion cleaner had some chlorinated ingredients in them and the new one didn't. I told him that we had reports from some of the Safety-Kleen users in the Sacramento area that heat and fumes were generated when the two immersion cleaners were mixed. Mr. Knous said that he had no knowledge of this.

I look at the drum storage area holding the perchloroethylene and it looked good. No cracks were evident but there were patches of

bare concrete. I look at the sumps in both storage area and they looked dry. One had spiderwebs and a lot of leaves in it. They both look like they haven't been used in awhile.

I took photos of the drum storage areas, the return/fill shelter, the loading/unloading, and the outside of the facility. I thanked Mr. Knous, Mr. Spencer, and Mr. Clements for their time and asked if they had any questions. They said no. The inspection finished approximately 10:30 a.m.