# SOIL MANAGEMENT PLAN

## IKEA Property, Inc.
## 4300 East Shore Highway
## Emeryville, California

Prepared for

IKEA Property, Inc.

January 8, 1999

Prepared by

EMCON
1433 N. Market Blvd., Suite 1
Sacramento, California 95834

Project 22175-001.001

# Department of Toxic Substances Control

Jesse R. Huff, Director
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, California 94710-2721

January 14, 1999

Gray Davis
Governor

Winston H. Hickox
Secretary for
Environmental
Protection

Dan Easter
EMCON
1433 North Market Blvd.
Sacramento, California 95834

JAN 20 1999

Dear Mr. Easter:

**Soil Management Plan for IKEA Property (Former Barbary Coast Steel Site)**
**4300 East Shore Highway, Emeryville, California**

The Department of Toxic Substances Control (Department) has reviewed the Soil Management Plan dated January 8, 1999 for IKEA Property (former Barbary Coast Steel site) located at 4300 East Shore Highway, Emeryville, California.

After several iterations of revision, our comments are adequately addressed by the final Soil Management Plan. However, we still have some comments on the Health and Safety Plan. Please incorporate the attached comments and submit the revised pages within five days from the date of this letter. With this condition, the Department authorizes the implementation of the Soil Management Plan.

A work notification sheet should be prepared describing the construction work and schedule, and distributed prior to the commencement of construction . We understand that your contractor will start removing the existing concrete next week.

If you have any questions, please call Ted Park of my staff at (510) 540-3805.

Sincerely,

Barbara J. Cook, P.E., Chief
Northern California-Coastal
Cleanup Operations Branch

Department of Toxic Substances Control

Jesse R. Huff, Director
5796 Corporate Avenue
Cypress, California 90630

Gray Davis
Governor

Winston H. Hickox
Secretary for
Environmental
Protection

**MEMORANDUM**

**TO:** Ted Park, Project Officer
Hazardous Substances Engineer
Site Mitigation Branch

**FROM:** Kathleen Yokota
Associate Industrial Hygienist
Human and Ecological Risk Division (HERD)
Industrial Hygiene Section (IHS)

**DATE:** January 13, 1999

**SUBJECT:** IKEA PROPERTIES-HEALTH AND SAFETY PLAN
PCA code: 11070 Site number: 201062-00

---

## BACKGROUND

The Site Mitigation Branch in Berkeley requested HERD-IHS to review the Health and Safety Plan (HASP) for site development activities at the IKEA site in Emeryville, California.

This HASP was prepared for specific site development activities which includes limited excavation of the permanent cap for installation of utilities, footings, landscaping and other improvements.

The site was formerly owned by Barbary Coast Steel (BCS) and was operated as a steel manufacturing plant. In 1996 and 1997, remedial action was performed by excavation of 5,170 cubic yards of soil, in addition to placing a permanent asphalt cap on the unpaved areas of the site.

Soils excavated during this activity may contain lead, polychlorinated biphenyls (PCBs), and/or petroleum hydrocarbons above cleanup levels. The property is located at 4300 East shore Highway, Emeryville, California.

## DOCUMENT REVIEWED

HERD-IHS reviewed the "Health and Safety Plan for Implementation of the Soil Management Plan". This document was prepared by EMCON for employees of the contractor and other individuals working at the site. The plan was dated December 5, 1997 and was received by HERD on December 18, 1997. In response to HERD comments, a revised HASP was prepared. The revision was dated December 31, 1998 and was received on January 12, 1999.

## COMMENTS

The HERD-IHS review finds that the revised submitted HASP fails to address the comments in the memo dated February 11, 1998. The items are listed below:

1. **Hazard Analysis 3.0, Page B-3-1** Title 8 California Code of Regulations, Section 5192 (b)(4)(B)(1) requires a task and hazard analysis. The plan discusses the field activities at the site, however, there is no correlation between the field activities and the suspected hazards. Each phase of the project: set up, soil excavation, and soil sampling must list the hazards associated with each task. For example, the plan failed to mention that dust exposures, chemical exposure, noise, and heavy lifting were potential hazards associated with soil excavation activities. Different contractors may perform different tasks and therefore must be aware of the hazards that they may be exposed to.

2. **Health and Safety Training 10.0, page B-10-1** Please provide an agenda of each of the HAZWOPER training classes required of EMCON employees.

## CONCLUSIONS

The HASP does not contain all of the elements specified in T8 CCR, section 5192. Areas identified as deficient must be corrected or clarified.

Future changes in the HASP should be clearly identified. This may be done in several ways: by submitting revised pages with the reason for the changes noted, by the use of strikeout and underline, by the use of shading and italics, or by cover letter stating how each of the comments herein has been addressed.

HERD-IHS is available to discuss the necessary revisions and approach. Thank you for the opportunity to review this document. Should questions arise regarding this review and/or related issues, please contact Kathleen Yokota at (714) 484-5358.

PEER REVIEW BY: _____

Nannette Oseas, CIH
Senior Industrial Hygienist

cc: Site File
HERD

EMCON
1433 N. Market Boulevard
Sacramento, California 95834-1943

PHONE: 916/928-3300
FAX: 916/928-3341

# FAX TRANSMITTAL

| To: | Company | Fax No. | Telephone No. |
|---|---|---|---|
| Ted Park | DTSC | (510) 540-3819 | (510) 540-3805 |

From: **Dan Easter**

Project No.: 22175-001.001

Date: January 26, 1999

Total No. of Pages: 4

Subject: IKEA - Emeryville

X URGENT X FOR REVIEW ☐ PLEASE REPLY ☐ PLEASE RECYCLE

Notes/Comments:

Based on my January 25, 1999, telephone conversation with Ms. Kathleen Yokota, Associate Industrial Hygienist, Human Ecological Risk Division (HERD), the attached pages are submitted for review and approval. The pages are submitted to comply with the HERD Memorandum dated January 13, 1999, requesting additional information pertaining to the Health and Safety Plan for the IKEA site.

Ms. Yokota suggested a table (attached Table B-4) be prepared in response to item #1 of the memorandum to correlate the field activities (soil excavation and sampling) with potential hazards. Revised page B-3-1 includes reference to Table B-4. Additionally, an outline of EMCON's 8-hour health and safety refresher training program is submitted to comply with item #2 of the memorandum.

Thank you.

(916) 928-3300, EX. 357

Table B-4

Summary of Potential Hazards Associated
with Soil Excavation and Sampling Activities

| Potential Hazards | Activity | | |
|---|---|---|---|
| | Soil Excavation | Soil Sampling | Decontamination |
| Chemical Exposure (lead, hydrocarbons, PCBs) | X | X | X |
| Dust exposure | X | X | |
| Falling objects | X | X | |
| Noise | X | X | |
| Slips, Trips, and Falls | X | X | X |
| Thermal Stress | X | X | X |
| Refer to the text of the Health & Safety Plan for more information | | | |

# 3 HAZARD ASSESSMENT AND CONTROL MEASURES

This HSP provides standard operating safety procedures for personnel conducting the following remedial action activities:

## 3.1 Soil Excavation and Soil Sampling

The site soils present the potential for chemical exposure hazards. The equipment that will be used to complete the site development activities presents the potential for physical hazards. The following sections discusses the potential chemical and physical hazards associated with the site development activities at the site.

The constituents of potential occupational exposure concern at the site are lead, PCBs, and petroleum hydrocarbons. A brief description of these constituents, the relevant toxicological data, and an exposure hazard assessment is presented below. A summary of the concentrations detected in soils and the related health hazard information are presented in Table B-1. Table B-4 summarizes potential hazards associated with soil excavation and sampling activities.

Field personnel are required to control exposure primarily through the use of safe work practice and engineering controls. The working conditions will be assessed using air monitoring instruments and visual observations. The action levels specified in Section 4 will be used to control activities in areas where hazardous levels of dusts may be present. Air monitoring will be conducted during the excavation activities to assess airborne levels of potential contaminants.

## 3.2 Chemical Hazards

Soils in fourteen areas of the site have been remediated. The highest concentrations of constituents detected in the soil samples from the areas already remediated are presented in Table B-1. Although impacted soils in these areas have been removed, they are presented as a worst-case scenario for future safety monitoring. Also included in the table are (1) permissible exposure limits (PELs), (2) concentrations in air that would be immediately dangerous to life or health (IDLHs), (3) potential exposure pathways, and (4) acute exposure symptoms. The PELs listed in Table B-1 are defined as the time-weighted average concentrations for a nominal 8-hour work day and a 40-hour work

# TABLE OF CONTENTS

## 1998

## EMCON

## Annual Safety and Health Training

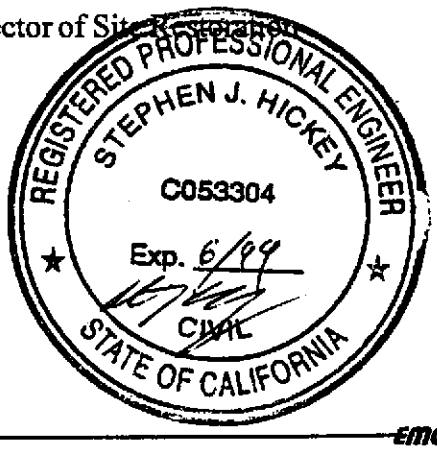
**Soil Management Plan**
**IKEA Property, Inc.**
**4300 East Shore Highway**
**Emeryville, California**

The material and data in this report were prepared under the supervision and direction of the undersigned. This report was prepared consistent with current and generally accepted geologic and environmental consulting principles and practices that are within the limitations provided herein..

EMCON

Dan Easter, C.E.G.
Project Manager

Steve Hickey, P.E.
#C053304
Director of Site Restoration



# CONTENTS

## CONTENTS (Continued)

# TABLES AND ILLUSTRATIONS

## Figures



## Drawings



Not included in copy to County to reduce report reproduction time. Drawings are available upon request.

# LIST OF ACRONYMS

| | |
|---|---|
| ACWD | Alameda County Water District |
| BCS | Barbary Coast Steel |
| bgs | below ground surface |
| CalTrans | State of California Department of Transportation |
| DTSC | California Environmental Protection Agency, Department of Toxic Substances Control |
| FS | feasibility study |
| HSP | Health and Safety Plan |
| IKEA | IKEA Property, Inc. |
| Judson | Judson Steel Corporation |
| $mg/m^3$ | milligrams per cubic meter |
| OSHA | Occupational Safety and Health Administration |
| PCBs | polychlorinated biphenyls |
| PHEE | Public Health and Environmental Evaluation |
| ppm | parts per million |
| RAP | Remedial Action Plan |
| RDIP | Remedial Design and Implementation Plan, Phase I |
| RI | Remedial Investigation Report |
| RWQCB | Regional Water Quality Control Board |
| SMP | Soil Management Plan |
| TPHD | total petroleum hydrocarbons as diesel |
| USEPA | U.S. Environmental Protection Agency |

# 1 INTRODUCTION

On behalf of IKEA Property, Inc. (IKEA), EMCON has prepared this soil management plan (SMP) for the site at 4300 East Shore Highway in Emeryville, California (Figure 1). The site, located on 15.5 acres in Emeryville and Oakland, will be developed as a retail furniture store. The site was formerly owned by Barbary Coast Steel and operated as a steel manufacturing plant. EMCON prepared this SMP for submittal to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), as required by the final Agreement and Covenant Not to Sue (Docket # HSA 97/98-022), dated October 7, 1997, between the DTSC and IKEA (Agreement). In 1996 and 1997, remedial action was performed at the site as was approved by DTSC.

This SMP has been prepared for IKEA for use during development activities at the site which involve limited excavation of the permanent cap for installation of development-related utilities, foundations, landscaping, and other improvements. This SMP describes how soil will be managed during the activities described above. It is anticipated that construction will be performed in 1999.

Resources used in preparing this SMP included the following:

- Requirements of the DTSC as stated in Exhibit E of the *Agreement and Covenant Not to Sue* between the DTSC and IKEA, October 7, 1997
- Background information presented in *Feasibility Study for Remedial Action, Barbary Coast Steel Site, Emeryville, California* (EMCON; January 9, 1996a)
- Site soil-cleanup levels presented in *Final Remedial Action Plan, Barbary Coast Steel Site, Emeryville, California* (EMCON; May 31, 1996b) (RAP)
- Procedures for soil excavation presented in the *Remedial Design and Implementation Plan, Phase I, Barbary Coast Steel Site, Emeryville, California* (EMCON; June 25, 1996c) (RDIP-Phase I)
- *Removal Action Report, Barbary Coast Steel Site, Emeryville, California* (EMCON; February 5, 1997a)
- *Remedial Design and Implementation Plan, Phase II, Barbary Coast Steel Site, Emeryville, California* (EMCON; November 5, 1996d) (RDIP-Phase II)

- *Remedial Action Completion Report, Barbary Coast Steel Site, Emeryville, California* (EMCON; April 2, 1997b)

- Comments from the DTSC, on the elements of this SMP

The following elements are included in this SMP:

- Section 2 Background - includes site description and history, and agency involvement

- Section 3 Proposed Development

- Section 4 Prefield Activities - includes health and safety plan preparation and permitting issues

- Section 5 Soil Excavation - includes methodology for characterizing concrete debris and excavated soils during site development activities

- Section 6 Soil Sampling - includes procedures for soil stockpile sampling and analyses

- Appendix A Exhibit E (*Scope of Work*) of Agreement

- Appendix B Health and Safety Plan

- Appendix C Traffic Plan

- Appendix D Soil Stockpile Sampling Procedures

# 2 BACKGROUND

The site is at 4300 East Shore Highway, Emeryville, California, and was a former Barbary Coast Steel (BCS) steel manufacturing plant (Figure 1). The site is approximately 15.5 acres and is currently bordered by an industrial site to the north and Southern Pacific Railroad to the east. Interstate Highways 580 and 80 border the site to the south and west. The closest residential areas are more that 1,500 feet southeast of the site. There is a shopping center approximately 1,000 feet north of the site.

More than one-third of the initial total 24.6 acres of the site has been acquired by state and local agencies for public works activities. CalTrans has acquired the western portion of the site to widen I-80. The City of Emeryville has extended Shellmound Avenue across the site. The areas acquired total about 9.1 acres. The remaining 15.5 acres, the subject of this SMP, are owned by IKEA. Section 3.4 of the property deed restriction (dated April 10, 1997), states that: "Single family residences shall not be permitted on the property. Nothing herein shall preclude other types of residential development, including, without limitation, apartment complexes, condominiums, and hotels."

## 2.1 Site History

BCS acquired the site from Judson Steel Corporation (Judson) in 1987, and owned the site until September 1997. Judson manufactured steel from scrap iron from approximately 1882 until 1987. From 1987 until 1991 BCS manufactured steel reinforcing bars (rebar) from scrap iron. In 1991, BCS ceased operations at the site and removed the machinery and demolished the buildings. All of the structures have been dismantled except for existing concrete slabs and paved areas (Figure 2).

In the past, the incoming scrap material may have contained oils, lead, and polychlorinated biphenyls (PCBs). The lead may have come from lead pipes, painted surfaces, car batteries, and other sources. PCBs and oils were commonly used in transformers and other heat resistant machinery and may have been present in the scrap material. The site was served by aboveground and underground storage tanks containing petroleum hydrocarbons. These were used for servicing railcars and trucks, and for operating the furnace on the site. As a result of operations at the site, some of the soils contain petroleum hydrocarbons, lead, and PCBs. The site has been remediated consistent with DTSC approved Final remedial Action Plan (EMCON, 1996b)

requirements. Residual concentrations of these constituents were allowed to be capped and left in place based on health risk assessments. The Remedial Action Completion report (EMCON, April 2, 1997) was approved by the DTSC in their letter dated April 10, 1997.

In September 1997, IKEA acquired the property from BCS to commercially develop the site. An unpaved portion of the southeast corner has not been capped and is presently being used by CalTrans. This portion of the site will be capped and developed as a portion of the IKEA retail store parking lot after the CalTrans easement agreement expires in December 1998.

## 2.2 Site Geology and Hydrogeology

The site is underlain by an artificial fill layer 3 to 12 feet thick over native Bay Mud deposits. The fill thickness increases east to west across the site and consists of a historical mix of sandy soil with metal, brick, concrete, and slag fragments. The Bay Mud is predominantly clay and silt with minor amounts of sand. Approximately one-third of the land area in the city of Emeryville consists of fill placed over Bay Mud; historical maps indicate that the western portion of the site was part of the Bay until at least 1911.

Shallow groundwater is encountered in two contiguous zones under the site. The upper shallow zone occurs in the fill at 3 to 8 feet below ground surface (bgs) and generally flows southwest, toward the Bay. The lower shallow groundwater zone occurs in the native Bay Mud. The piezometric elevation of this zone is higher than that of the upper zone, indicating an upward gradient from the lower shallow zone to the upper shallow zone.

Water from a deeper water-bearing zone has been used in the steel manufacturing operations at the site. Records obtained from the Alameda County Water District (ACWD) indicate the on-site water production well, WSW-1, was screened to a depth of 487 feet bgs. No construction logs could be located for this well. This well was decommissioned on September 24, 1996 by backfilling with a Portland cement and sand slurry to about 4 feet below the ground surface. The top four feet of the well was backfilled with soil. Well decommissioning is documented in the *Removal Action Report* (EMCON, 1997a). ACWD records indicate there are no other water production wells within a 1-mile radius of the site.

## 2.3 Agency Involvement

The DTSC issued a Consent Order to BCS in March 1993 (Docket No. I&SE 92/93-013). The Consent Order required that BCS conduct a remedial investigation of the hazardous substances that may be present on or beneath the site. The plan for conducting the remedial investigation, risk assessment, and remedial alternatives evaluation is described in the *Workplan for Remedial Investigation and Feasibility Study* (EMCON, May 1993a). This Workplan as well as other plans were reviewed and approved by the DTSC prior to commencing the site investigation and remedial action work.

During the remedial investigation; soil, groundwater, and air samples were collected and analyzed and the results are described in the *Remedial Investigation* (RI) R*eport* (EMCON, 1993b) and two addendum reports. The chemical analyses, potential exposure routes, and future site usage were assessed in the *Public Health and Environmental Evaluation* (PHEE; EMCON, 1994a) report to identify any potential health risks associated with the compounds detected at the site. After the potential risks were determined, the *Feasibility Study for Remedial Action* (FS; EMCON, 1996a) was prepared to assess the alternatives for remediating the site.

Risk-based soil cleanup levels were developed for the site as part of the final Remedial Action Plan (RAP) (EMCON, 1996b). Based on the results from the risk evaluation and on guidelines from the DTSC and the California Regional Water Quality Control Board (RWQCB), cleanup levels were determined for the following substances found at the site: petroleum hydrocarbons (as diesel) (1,000 parts per million [ppm]), lead (5,000 ppm), and PCBs (10 ppm).

The remedial action at the site was divided into two phases (I and II). Phase I consisted of excavation of approximately 5,170 cubic yards of soil impacted above established cleanup levels and the decommissioning of wells. Phase I activities were completed between July and October 1996 and are documented in the *Removal Action Report* (EMCON, 1997a). The Phase II activities consisted of placing a permanent asphalt cap on unpaved areas at the Site and installing additional groundwater monitoring wells. The Phase II activities are documented in the *Remedial Action Completion Report* (EMCON, 1997b). The Phase II field work was conducted between November 1996 and March 1997.

In a letter to BCS dated April 10, 1997, DTSC approved the *Remedial Action Completion Report*. Except for capping the portion of the site used by CalTrans, the *Remedial Action Completion Report* documents the completion of remediation at the site.

A deed restriction on the property was recorded on May 28, 1997, to limit the future use of the site to commercial and industrial uses and to require advance approval from the DTSC before any alteration to the cap.

# 3 PROPOSED DEVELOPMENT

The proposed development includes an approximately 275,000 square foot building, asphalt parking areas, and associated utilities (see attached grading utility plans). Approximately 30,000 cubic yards of clean soil will be imported, placed and compacted where necessary to achieve design grades depicted on the attached Preliminary Grading and Drainage Plans.

## 3.1 Proposed Building

The existing asphalt and concrete foundation remnants within the proposed building footprint will be removed and a new building foundation and concrete slab floor constructed. A concrete pile foundation is proposed. Approximately 4 to 5 feet deep pilot holes will be drilled at each pile location before the piles are driven to design depths. The soils generated from the pilot holes will be stockpiled and tested as outlined in this plan.

The proposed finished floor elevation of the building is approximately 1 to 4 feet above existing grades. Clean fill will be placed beneath the building to achieve necessary grades and a concrete slab floor constructed to final grade. The concrete slab floor will comprise the permanent cap beneath the building.

## 3.2 Proposed Parking Areas

The current asphalt cap in the proposed parking lot areas will remain undisturbed, except where noted below, and will receive clean compacted fill as needed for proposed grades. Approximately 8 inches of clean baserock and a minimum 4-inch thick layer of asphalt pavement will be placed on the clean fill or existing pavement. The baserock and asphalt pavement will comprise the permanent cap for the parking areas. In the immediate vicinity of the proposed parking lot storm drain drop inlets, the existing asphalt cap and a portion of the underlying soil will be excavated by a grinding-type machine to achieve proposed subgrade elevations. Once subgrade elevations are achieved, the drop inlet areas will receive baserock and asphalt as described above.

The CalTrans easement area will be permanently capped with the same pavement section as the other parking areas, 8 inches of baserock and 4 inches of asphalt pavement.

## 3.3 Utility Trenches and Temporary Soil Stockpiles

Approximately 4,600 linear feet of trenches will be excavated for utility installation (e.g., storm drains, water pipelines, and electrical conduit). The bottom of the trenches will be approximately 2 to 3 feet below current ground surface. Approximately 700 to 1,000 cubic yards of soil will be generated from the utility excavations. Clean, compacted fill will be used to backfill the trenches.

Excavated soils will be stockpiled on and covered with visqueen in the southern portion of the site and tested as outlined in this plan. Excavated soil that is impacted (i.e., above the soil cleanup levels established for the site) will be properly disposed of in accordance with this plan. Excavated soil that is not impacted will be used on site as backfill soil where needed beneath the permanent cap.

# 4 CONSTRUCTION ACTIVITIES

This section describes the construction activities that will be performed before disturbance of the permanent cap begins.

## 4.1 Health and Safety Plan

The health and safety plan (HSP) prepared for the Phase I and II remediation conducted for BCS will be followed as applicable during the site development activities. This plan is contained in Appendix B. Equipment and procedures to control dust emissions and monitor airborne levels of dust particulates at the site, as emphasized in the HSP, will be implemented during work which results in disturbance of the permanent cap. Similar measures will be implemented during work which disturbs subsurface soil and groundwater for site development activities as well as post-development capping of the site, and other activities causing dust emissions from potentially impacted soils.

## 4.2 Permits

It will be the responsibility of IKEA or their authorized agent to obtain the necessary permits for site development-related activities.

A traffic plan was submitted to and approved by the Emeryville Police Department (letter entitled "*Truck Route- Barbary Coast Steel,*" EMCON July 19, 1996) for the Phase I remediation activities. An addendum to this plan was submitted December 11, 1997. This plan will be followed during transportation of impacted soil if any, during site construction. A copy of this plan and addendum is attached in Appendix C. The plan documents the routes of entry and exit to the site for vehicles during grading, and travel routes for trucks on public right-of-ways either when bringing or removing soil from the site.

# 5 SOIL EXCAVATION

This section describes the procedures for concrete slab characterization, the types of construction equipment to be used, procedures for excavating, construction monitoring, air monitoring, excavation backfilling, soil transportation and disposal, and equipment decontamination.

## 5.1 Concrete Slab Characterization

Concrete paved areas cover a significant portion of the site (depicted as shaded areas on the attached Preliminary Grading and Drainage Plans). Portions of this concrete may be removed during site development activities. The concrete that is removed will be inspected visually for staining. Soil beneath the concrete removed will also be visually check for staining. Concrete that is not stained will be placed in a "clean" stockpile, which will be transported to and disposed at a Class III landfill or crushed and recycled for use as roadbase. Concrete that shows staining will be segregated into a separate stockpile. The volume of stained concrete will be evaluated to determine the most economical method for disposal. If only a small volume (less than 10 cubic yards) of stained concrete is encountered, the concrete will not be characterized and will be disposed with the impacted soil. If a significant volume of concrete is generated, the concrete will be pressure-washed to remove staining. Rinsate water will be containerized and characterized for disposal (Section 6.4). Chip samples will then be taken from the concrete and tested for PCBs and diesel to confirm that the contamination has been removed. After receiving sample results confirming that the concrete has been cleaned, it will be recycled or disposed as described above.

If a significant volume of stained concrete is accumulated, one chip sample will be taken for every 200 square feet of stained concrete. As outlined in the DTSC's *Permit Writers Instructions for Closure of Treatment and Storage Facilities* (DTSC, 1993), the chip sample will be obtained from a 10 x 10 centimeter area from the first one inch in depth of concrete. A rotohammer will be used to chip the concrete. The concrete chips will be placed in plastic bags, the headspace will be reduced as much as possible, and the bags will be sealed in a chilled cooler for shipment to a state-certified laboratory.

The concrete samples will be analyzed for petroleum hydrocarbons, including diesel, by U.S. Environmental Protection Agency (USEPA) method 8015 modified, and for PCBs by USEPA method 8082.

## 5.2 Excavation Procedures

This section describes procedures for excavation soil monitoring, stockpiling, and dewatering (if required).

### 5.2.1 Excavation Soil Monitoring

Heavy equipment will be used to excavate soil from the utility trenches. Soils will be stockpiled on and covered with visqueen in the southern portion of the site. The soils will be field screened by visually inspecting during excavation and field tested after stockpiling. The trenches will also be visually inspected for staining. Field screening is more fully described in Section 6. If, based on the results of the field screening, soils appear to be impacted the soils will be segregated into either a potentially non-impacted or potentially impacted stockpile. Confirmation samples will be collected from the stockpiles for disposal purposes (described in Section 6). Soils impacted at levels above the site-cleanup levels will be disposed of as described in Section 5.5. The area from which potentially impacted soils were removed will be noted and located on a site map. If confirmation testing indicates the soils are impacted, the trench excavation side wall and floor (if above groundwater surface) in the vicinity of the impacted soils removal area will be sampled using composite sampling methods and frequency described in Section 6.2 to evaluate the need for additional excavation. Soils confirmed as non-impacted soils or with concentrations below cleanup levels will be used on site as needed beneath the permanent cap.

replace with see p. 6-1

### 5.2.2 Stockpiling

Potentially non-impacted soils will be temporarily stockpiled in an area designated by the excavation contractor. Soils suspected to be impacted will be temporarily stockpiled on-site on a minimum 20-mil-thick plastic liner or on concrete. The soil will be covered with plastic to prevent dust and to a lesser degree, vapor emissions. The edges of the liner shall be elevated at least 4 inches using lumber to prevent precipitation run-on or runoff. The edges shall also be weighted down to prevent the plastic from shifting or blowing away.

### 5.2.3 Dewatering

If dewatering is needed during excavation activities, the groundwater will be contained in a mobile storage tank located at the site. Appropriate samples will be obtained and analyzed for characterization and disposal options. The water will either be treated on-site using carbon-adsorption canisters and disposed to the storm sewer system or used for dust control. If the water is disposed using either of these methods, the RWQCB will be informed with a letter describing the method of disposal, the total volume of water to be disposed, and the discharge rate. Approval will be obtained from the RWQCB before the water is disposed or used for dust control. Alternatively, the water will be removed from the site and appropriately disposed. Additional water that may be needed for dust control will be obtained from a near-by fire hydrant on Shellmound Street.

## 5.3 Construction Monitoring

During excavation activities, a field engineer will be on site daily to verify compliance with this SMP, assist in traffic control coordination, direct contractor(s) during soil stockpile sampling (if required), document field observations, and verify compliance with the health and safety plan. The contractor(s) will be required to follow the procedures outlined in the Health and Safety Plan (Appendix B). The field observations will include noting any stained areas, volume of excavated soil, underground structures (utilities, piping, etc.), and groundwater conditions. EMCON will prepare daily field reports documenting field monitoring activities.

## 5.4 Air Monitoring

Dust monitoring will be conducted downwind of the work areas (i.e., onsite between the work area and the property boundary downwind of the work area). Based on the lead concentrations found in site soils, the total dust-action levels for activities that can result in dust emissions at the site will be 1.5 milligrams per cubic meter ($mg/m^3$). This will prevent lead exposure above the Cal-OSHA action level of 0.03 $mg/m^3$. The dust action level of 1.5 $mg/m^3$ is based on the maximum lead value in site soils. The rationale for these levels is presented in the BCS RDIP-Phase I (EMCON, 1996b), which was approved by the DTSC in June 1996. Visible dust emissions will be suppressed using water spray during site development operations or during activities that result in emission of dust at the site.

## 5.5 Utility Trench Backfill

Utility trenches will be backfilled using sand bedding compacted to minimum 95 percent relative compaction. A minimum course of 8 inches of clean baserock, compacted to minimum 95 percent relative compaction, and a minimum 4-inch thick layer of asphalt pavement will be placed over the compacted sand bedding. The 4-inch thick asphalt pavement will comprise the permanent cap over the utility trenches.

## 5.6 Transportation and Disposal Procedures

The following transportation and disposal procedures for impacted soils were prepared following guidelines in the Transportation Plan - Preparation Guidance for Site Remediation (California EPA, May 1994). Soils containing diesel, PCBs, or lead at concentrations above the soil cleanup levels established for the site will be disposed at an approved disposal facility (e.g., Chemical Waste Management facility, Kettleman Hills, California). The impacted soils will be transported by a trucking company that is an approved hazardous waste transporter. The necessary documents, such as the bill of lading or waste manifest forms will be completed and will accompany the truck driver to the waste disposal facility. Following confirmation analyses (Section 6), soils not impacted above the site cleanup levels will be placed beneath the permanent cap.

The trucks will be loaded at the site and appropriately covered using tarps or similar covers. Upon approval by the City of Emeryville Police Department, the truck route (Appendix C) used during the remedial action work will be used during the site development activities. The trucks will exit the site and travel north on Shellmound Street about 2 blocks to Powell Street. On Powell Street, they will travel east one block to Interstate 80. From Interstate 80, the trucks will use freeways and interstates to travel to the disposal facilities. The trucks will not present interference to the existing traffic patterns in the area. Trucks will attempt to avoid the major commute times and will avoid residential areas and schools.

# 6 SOIL SAMPLING

This section describes the procedures for collecting soil samples from the soil stockpiles generated during excavations and subsequently placed in stockpiles for characterization. This section includes field-test kit screening, confirmation soil sampling locations, soil sampling procedures, and analytical procedures.

## 6.1 Field Test Kit Screening

Field-test kit screening of soil will be performed on the excavated soils. The field-test kits typically use an immunoassay/chromogenic technique for analysis and can provided for various detection levels. If the test results indicate the soil is impacted by the target compounds, the soil will be placed in the potentially impacted soil stockpile, or the potentially non-impacted soil stockpile if the field screening test is negative. Confirmation soil samples will be obtained from the stockpiles for analysis at a state-certified laboratory.

## 6.2 Soil Sampling

Soil samples will be collected from both the potentially non-impacted and the potentially impacted soil stockpiles to evaluate if the soil exceeds the site cleanup levels for diesel, lead, and PCBs. Samples will be collected from the two stockpiles at a frequency of one 4-point composite sample for every 100 cubic yards.

As described in Section 5.2.1, the area from which potentially impacted soils were removed will be noted and located on a site map. If confirmation testing indicates the soils are impacted, the trench excavation side wall and floor in the vicinity of the impacted soils removal area will be sampled. Samples will be collected in the vicinity of the impacted soils removal area at a frequency of one discrete sample for every ~~100~~ 50 linear feet of trench sidewall (both walls) and floor (if the floor is above the groundwater surface at the time of excavation). Trench walls and floor in the vicinity of confirmed non-impacted soil excavations will not be sampled.

## 6.3 Soil Sampling Procedures

At each sampling location, a shovel will be used to dig into the pile approximately 6 to 12 inches. Soil samples will be obtained by driving a brass sampling tube into freshly exposed soil. The soil samples will be covered on each end with Teflon® squares and capped with plastic end caps. The samples will be placed in a chilled cooler and transported along with appropriate chain-of-custody documentation to the laboratory. Each sample will be labeled with the project number, the sample designation and depth, and the date the sample was obtained.

Sampling procedures are contained in Appendix D. A Quality Assurance/Quality Control Plan for Soil Sampling and Analysis contained in Appendix D outlines procedures for collecting, and assessing the acceptability of, the laboratory analytical data, and therefore their usefulness in interpreting soil impacts above the established site cleanup levels.

## 6.4 Laboratory Analysis

Confirmation soil samples will be analyzed as described below:

- TPHD by USEPA method 8015 modified
- Total lead by USEPA method 6010/7000
- PCBs using USEPA method 8082

The samples will be analyzed on a priority-turnaround basis (24 to 48-hour) to allow the soil characterization to be expedited.

Water samples will be analyzed for TPHD by USEPA method 8015 and for PCBs by USEPA method 8082.

# LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

# REFERENCES


Cal-EPA, DTSC. 1993. *Permit Writers Instructions for Closure of Treatment and Storage Facilities.*

Cal-EPA, DTSC. 1997. *Agreement and Covenant Not to Sue, Exhibit E.* Agreement made between DTSC and IKEA. September 23.

EMCON Associates. 1993a. *Workplan for the Remedial Investigation and Feasibility Study, Emeryville Facility.* May.

EMCON Associates. 1993b. *Remedial Investigation, Barbary Coast Steel Corporation, California.* October 27.

EMCON. 1994a. *Public Health and Environmental Evaluation.* January.

EMCON. 1994b. *Estimated Travel Time of Petroleum Hydrocarbons to San Francisco Bay.* April 1994.

EMCON. 1995. *Soil Cleanup Levels for High Boiling Point Hydrocarbons.* August.

EMCON. 1996a. *Feasibility Study for Remedial Action, Emeryville, California.* January 9.

EMCON. 1996b. *Final Remedial Action Plan, Barbary Coast Steel Site, Emeryville, California. May 31.*

EMCON. 1996c. *Remedial Design and Implementation Plan, Phase I, Barbary Coast Steel Site, Emeryville, California.* June 25.

EMCON. 1996d. *Remedial Design and Implementation Plan, Phase II, Barbary Coast Steel Site, Emeryville, California.* November 5.

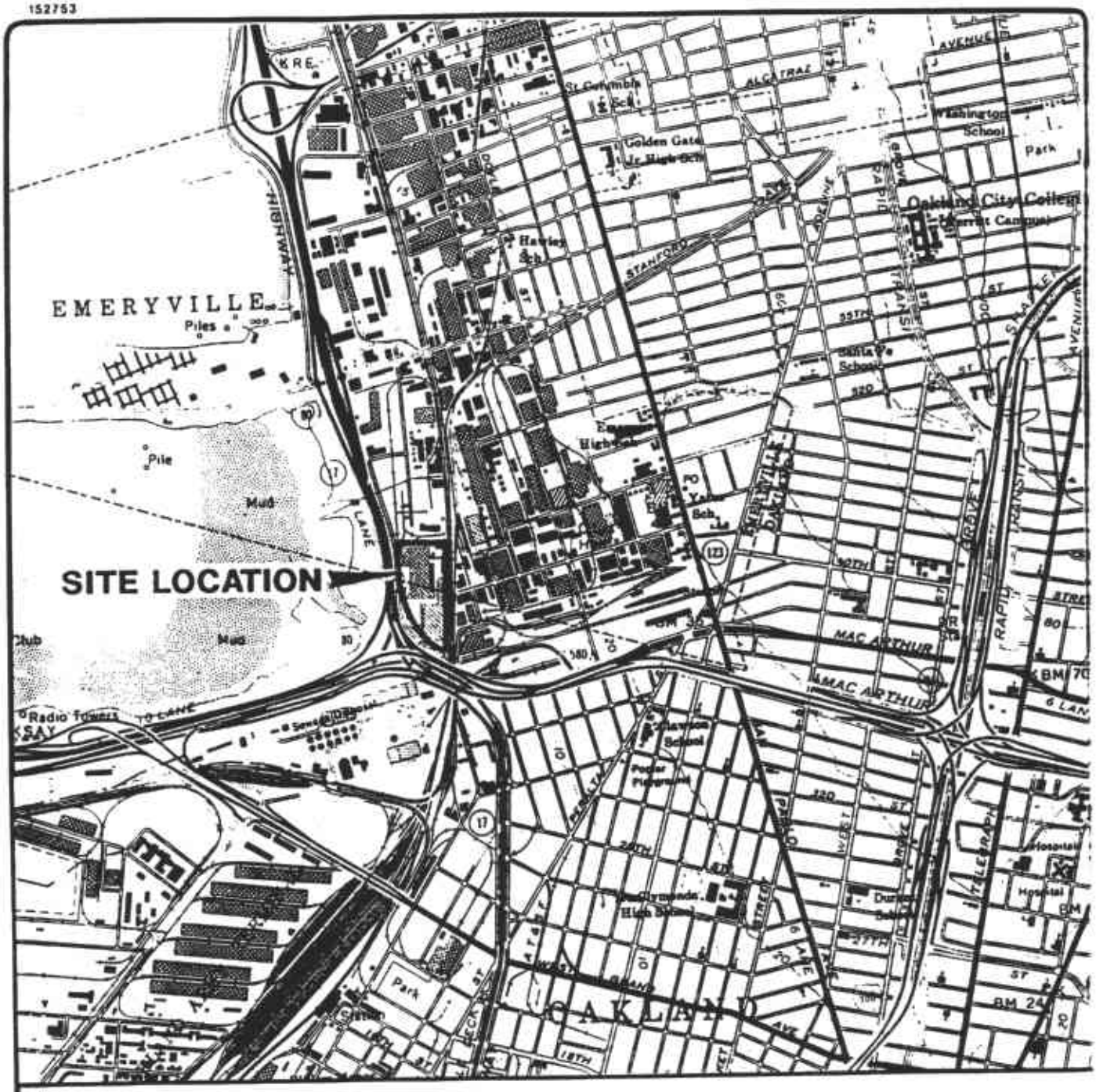
EMCON. 1997a. *Removal Action Report, Barbary Coast Steel Site, Emeryville, California.* February 5.

EMCON. 1997b. *Remedial Action Completion Report, Barbary Coast Steel Site, Emeryville, California.* April 2.

State Water Resources Control Board 1989. *Leaking Underground Fuel Tank Field Manual*. Prepared by the State of California, Leaking Underground Fuel Tank Task Force. October.

U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. 1990. *Guidance on Remedial Actions for Superfund Sites with PCB Contamination*. EPA/540/G-90/007. August.

152753

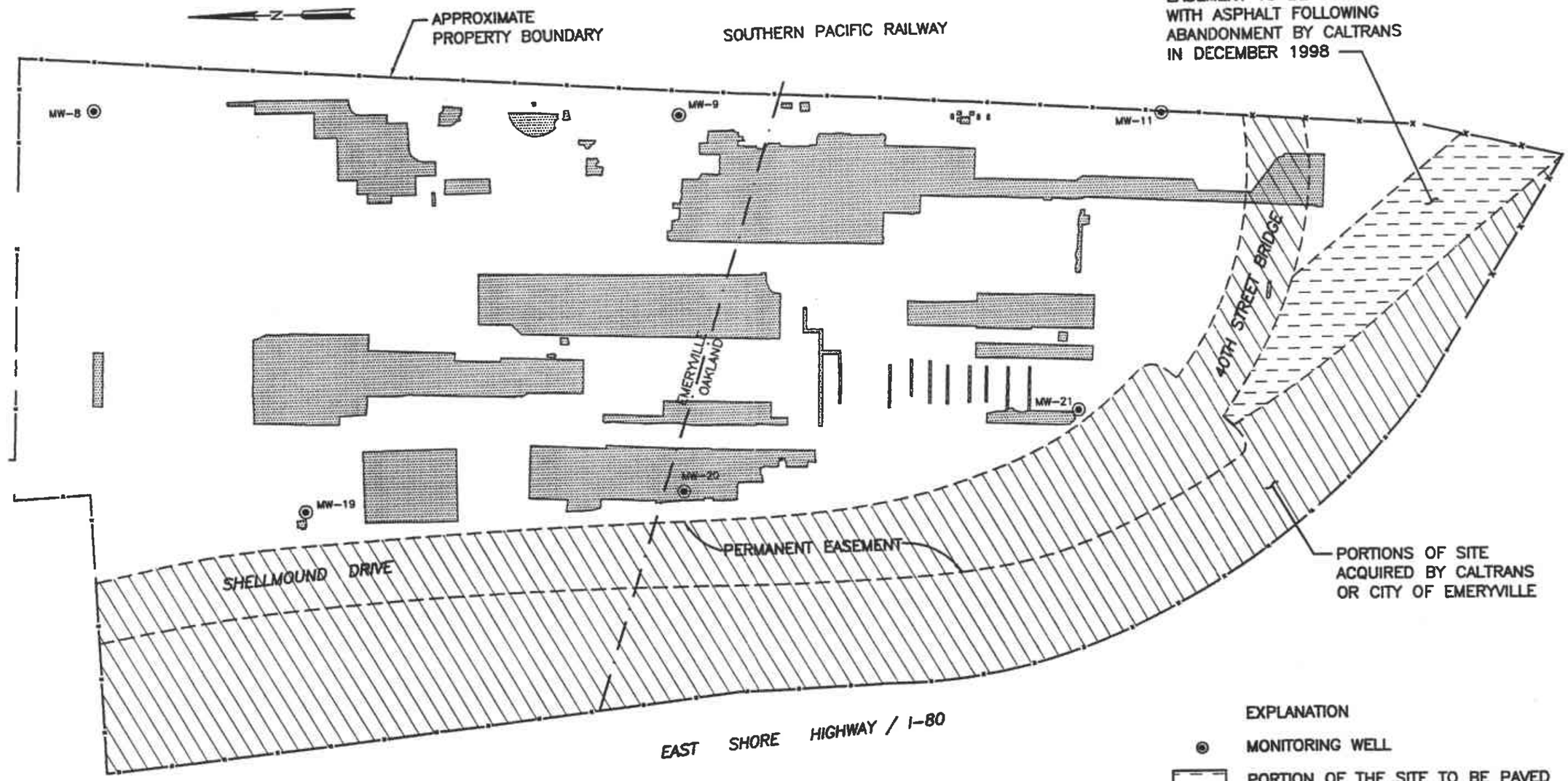



EMCON Associates

IKEA PROPERTY, INC.
4300 EAST SHORE HIGHWAY
EMERYVILLE, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO




EXPLANATION

- MONITORING WELL
- PORTION OF THE SITE TO BE PAVED AFTER THE CALTRANS EASEMENT AGREEMENT EXPIRES IN 1999
- AREAS OF EXISTING CONCRETE (ALL OTHER AREAS ARE ASPHALT PAVED)

EMCON

0 125 250
SCALE IN FEET

DATE NOV. 1997
DWN KLT
APP
REV
PROJECT NO.
2175-001.001

**FIGURE 2**
IKEA PROPERTY, INC.
4300 EAST SHORE HIGHWAY
EMERYVILLE, CALIFORNIA
**SITE PLAN**

IMAGE Files: <No Images>
XREF Files: <No Xrefs>
SANJOSE/CADD: N:\DWG\2175001\SJCONC.DWG Thu, 03/Dec/98 11:31am kblock
Dimscale: 125 Lscale: 125 Paltscale: 0

# APPENDIX A

# EXHIBIT E OF "AGREEMENT AND COVENANT NOT TO SUE"

EXHIBIT E

SCOPE OF WORK

The following Tasks will be completed as part of this Agreement:

TASK 1. Soil Management Plan

In order to redevelop the Site, the Settling Respondent will need to excavate portions of the temporary Site cap for installation of development related utilities, footings, landscaping and other improvements. The Settling Respondent will submit to DTSC, for review and approval, a Soil Management Plan describing how soil will be managed during the activities described above, and the specifications for the final Site cap.

TASK2. Public Participation

2.1 The Settling Respondent shall conduct appropriate public participation activities given the nature of the community surrounding the Site and the level of community interest.

TASK 2.2 The Settling Respondent shall develop and submit fact sheets to DTSC for review and approval when specifically requested by DTSC. The Settling Respondent shall be responsible for printing and distribution of fact sheets upon DTSC approval using the approved community mailing list.

TASK 3. Operation and Maintenance (O&M)

The Settling Respondent shall comply with all operation and maintenance requirements in accordance with the final RAP. The Settling Respondent shall enter into an O&M Agreement, which includes financial assurance, with DTSC for maintenance of the permanent Site cap. Settling Respondent will also submit an O&M Plan to DTSC for maintenance of the permanent Site cap.

TASK 4. Discontinuation of Remedial Technology

Any remedial technology employed in implementation of the final RAP shall be left in place and operated by the Settling Respondent until and except to the extent that DTSC authorized

the Settling Respondent in writing to discontinue, move or modify some or all of the remedial technology because the Settling Respondent has met the criteria specified in the final RAP for its discontinuance, or because the modifications would better achieve the goals of the final RAP.

TASK 5. Five-Year Review

Pursuant to Section 121(c) of CERCLA (42 U.S.C. 9601, et seq.), as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, the Settling Respondent(s) shall submit a remedial action review workplan within thirty (30) days before the end of the five-year period following approval of the final RAP. Within sixty (60) days of DTSC's approval of the workplan, the Settling Respondent will implement the workplan and shall submit a comprehensive report of the results of the remedial action review. The report shall describe the results of all sample analyses, tests and other data generated or received by the Settling Respondent.

TASK 6. Quality Assurance/Quality Control (QA/QC) Plan

All sampling and analysis conducted by the Settling Respondent under this Agreement shall be performed in accordance with a QA/QC Plan submitted by the Settling Respondent and approved by DTSC. The QA/QC Plan will describe:

(a) the procedures for the collection, identification, preservation and transport of samples;
(b) the calibration and maintenance of instruments;
(c) the processing, verification, storage and reporting of data, including chain of custody procedures and identification of qualified person(s) conduction the sampling and of a laboratory certified or approved by DTSC pursuant to Health and Safety Code section 25198; and
(d) how the data obtained pursuant to this Agreement will be managed and preserved in accordance with the Preservation of Documentation section of this Agreement.

TASK 7. Health and Safety Plan

The Settling Respondent will submit a Site Health and Safety Plan in accordance with California Code of Regulations, Title 8, section 5192 and DTSC guidance, which covers all measures,

including contingency plans, which will be taken during field activities to protect the health and safety of the workers at the Site and the general public from exposure to hazardous waste, substances or materials. The Health and Safety Plan should describe the specific personnel, procedures and equipment to be utilized.

# APPENDIX B

# HEALTH AND SAFETY PLAN

# APPENDIX B

# HEALTH AND SAFETY PLAN FOR IMPLEMENTATION OF THE SOIL MANAGEMENT PLAN 4300 East Shore Highway Emeryville, California

Prepared for

IKEA Property, Inc.

December 31, 1998

Prepared by

EMCON
1433 N. Market Blvd., Suite 1
Sacramento, California 95834

Project 22175-001.001

**Health and Safety Plan**
**for Implementation of the**
**Soil Management Plan**
**4300 East Shore Highway**
**Emeryville, California**

The material and data in this report were prepared under the supervision and direction of the undersigned.

EMCON

Dan Easter, C.E.G.
Project Manager

Steve Hickey
Manager of Site Restoration

# CONTENTS

## CONTENTS (Continued)

# TABLES AND ILLUSTRATIONS

## Tables



## Figures

# 1 INTRODUCTION

The IKEA Property, Inc. (IKEA) property (site) at 4300 East Shore Highway in Emeryville, California, will be developed as a retail furniture store in 1999. The site was formerly owned by Barbary Coast Steel (BCS) and operated as a steel manufacturing plant. In 1996 and 1997, remedial action was performed at the site as was approved by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC).

In a letter to BCS dated April 10, 1997, DTSC approved the *Remedial Action Completion Report*. Except for capping the portion of the site used by CalTrans, the *Remedial Action Completion Report* documents the completion of remediation at the site.

## 1.1 General

This health and safety plan (HSP) was developed to inform personnel of the potential hazards associated with implementing the soil management plan (SMP) at the IKEA Property, Inc. (IKEA) site at 4300 East Shore Highway, Emeryville, California and to provide general health and safety guidance for personnel soil excavation and sampling activities at the site.

The following regulatory, guidance, and background documents were used in developing this HSP:

- *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (National Institute for Occupational Safety and Health [NIOSH], Occupational Safety and Health Administration [OSHA], United States Coast Guard [USCG], U.S. Environmental Protection Agency [USEPA], 1985)
- *Standard Operating Safety Guides* (USEPA, 1988)
- 29 Code of Federal Regulations (CFR) Part 1910 and 1926 (U.S. Department of Health, Education, and Welfare, 1977)
- Title 8, California Code of Regulations (CCR)
- *Site Safety Plan Guidance Document for Site Assessment and Site Mitigation Projects* (California Department of Health Services [DHS], 1988)

- *Documentation of Threshold Limit Values and Biological Exposure Indices* (American Conference of Governmental Industrial Hygienists [ACGIH], 1989)
- *Remedial Action Plan, Barbary Coast Steel Site, Hayward, California* (RAP, EMCON, 1996)

This HSP should be reviewed in conjunction with the *Remedial Design and Implementation Plan* when evaluating compliance with Title 8, CCR, Section 5192 requirements. The risk evaluation data presented in the *Public Health and Environmental Evaluation* (EMCON, January 1994) was used to complete the chemical hazard assessment described in this HSP. Lead, polychlorinated biphenyls (PCBs), and petroleum hydrocarbons in soil are the constituents of concern addressed in this HSP. Other compounds have been detected during previous investigations at concentrations that do not present a significant risk to human health or the environment. These compounds are therefore not addressed in this plan.

## 1.2 Limitations

This HSP has been prepared for the specific tasks and dates identified. IKEA has requested that EMCON make this plan available to others for their use during the project. Any use of this HSP by third parties other than EMCON is at that parties sole risk. EMCON does not imply through any language in this HSP that responsibility for the safety programs and procedures of others is the responsibility of EMCON.

## 1.3 Site Development Activities

Site development activities planned for the IKEA site include limited excavation of the permanent cap for installation of development-related utilities, foundations, landscaping, and other improvements. Soils excavated during site development may potentially contain lead, PCBs, or petroleum hydrocarbons above cleanup levels.

## 1.4 Scope of HSP

This HSP provides standard operating safety procedures for personnel conducting the following site development activities:

- Soil excavation and soil sampling for foundation excavations and utility line placement

Soil sampling will be performed by EMCON personnel. Excavation will be performed by an IKEA contractor. EMCON and IKEA contractor personnel are required to comply

with all Cal/OSHA and Federal OSHA safety standards. The contractors are responsible for following all federal, state, and local requirements applicable to their operations that are not specifically addressed in this HSP. Upon request, the contractors shall provide IKEA documentation of safety training and medical surveillance program participation, and the applicable respirator fit-test records for all personnel conducting field activities.

## 1.5 Human and Environmental Exposure Pathways

The excavated soil from the areas excavated during site development activities are potential exposure media. The potential exposure pathways for constituents in the excavated soils include dermal contact, incidental ingestion, and inhalation of windblown dust during the field activities. The windblown dust potential exposure pathway is considered relatively minor because the majority of the site is paved or covered with asphalt and dust control measures will be implemented during construction.

# 2 PROJECT SAFETY AUTHORITY

The Site Superintendent, David Kasteler (DPR Construction, Inc.) has overall responsibility for site operations. Mr. Kasteler's cellular telephone number is (650) 224-6351.

## 2.1 Project Personnel

The following EMCON personnel are responsible for the health and safety of EMCON employees during soil excavation and sampling activities:

- Project manager - Dan Easter
- Project geologist - Rob Davis
- Project safety coordinator - Brian Primeau
- Site safety coordinator - Senior on-site EMCON field representative

Other IKEA contractors on site will provide IKEA with a list of project management and safety personnel by the first day of fieldwork.

The project manager has the authority to direct all activities. The project geologist and project safety coordinator are responsible for disseminating the information contained in this HSP to all EMCON personnel assigned to the project, and to the responsible representative of each contractor firm working at the site in conjunction with soil excavation. The site safety coordinator is responsible for the following items during implementation of the project:

- Inventorying safety supplies and equipment
- Conducting safety briefings
- Reporting accidents and incidents
- Enforcing safe work practices of EMCON employees

- Reporting unsafe work practices of others to the responsible IKEA representative
- Coordinating waste containment or storage

## 2.2 Enforcement of Safety Plan

Enforcement of all policies and practices of the HSP will be the responsibility of the site safety coordinator when the project safety coordinator is not present. The site safety coordinator has the authority to suspend work any time that he/she determines the provisions of this HSP are not being met. The site safety coordinator shall also inform the project safety coordinator and project engineer about individuals whose conduct is not consistent with the requirements of this HSP.

The project safety coordinator or his designee shall review the requirements of this HSP during a meeting with all project personnel (EMCON and contractor personnel) before the field activities begin. Safe work practices and protection of personnel and property as described in this HSP shall be emphasized during the safety meeting. EMCON field personnel will be required to sign a certification indicating that they will comply with the plan provisions (see Section 13).

The contractors shall identify their responsible representative for project safety by name before the field activities begin. Telephone numbers of these individuals for emergency contact shall also be provided.

# 3 HAZARD ASSESSMENT AND CONTROL MEASURES

This HSP provides standard operating safety procedures for personnel conducting the following remedial action activities:

## 3.1 Soil Excavation and Soil Sampling

The site soils present the potential for chemical exposure hazards. The equipment that will be used to complete the site development activities presents the potential for physical hazards. The following sections discusses the potential chemical and physical hazards associated with the site development activities at the site.

The constituents of potential occupational exposure concern at the site are lead, PCBs, and petroleum hydrocarbons. A brief description of these constituents, the relevant toxicological data, and an exposure hazard assessment is presented below. A summary of the concentrations detected in soils and the related health hazard information are presented in Table B-1. Table B-4 summarizes potential hazards associated with soil excavation and sampling activities.

Field personnel are required to control exposure primarily through the use of safe work practice and engineering controls. The working conditions will be assessed using air monitoring instruments and visual observations. The action levels specified in Section 4 will be used to control activities in areas where hazardous levels of dusts may be present. Air monitoring will be conducted during the excavation activities to assess airborne levels of potential contaminants.

## 3.2 Chemical Hazards

Soils in fourteen areas of the site have been remediated. The highest concentrations of constituents detected in the soil samples from the areas already remediated are presented in Table B-1. Although impacted soils in these areas have been removed, they are presented as a worst-case scenario for future safety monitoring. Also included in the table are (1) permissible exposure limits (PELs), (2) concentrations in air that would be immediately dangerous to life or health (IDLHs), (3) potential exposure pathways, and (4) acute exposure symptoms. The PELs listed in Table B-1 are defined as the time-weighted average concentrations for a nominal 8-hour work day and a 40-hour work

week, to which nearly all workers may be repeatedly exposed without adverse effect (Title 8, CCR, Section 5155). The IDLH values listed in Table B-1 represent a maximum level from which a person could escape within 30 minutes without escape-impairing symptoms or irreversible health effects (*NIOSH Pocket Guide to Chemical Hazards,* U.S. Department of Health and Human Services, 1994). However, the concentrations of constituents reported in the soil samples in the project area (which are reported on a weight to weight ratio) are not directly comparable to the airborne exposure criteria (PELs and IDLHs, which are reported on a weight to volume ratio in air).

A general description of the toxicological properties of the constituents of concern is presented below.

### 3.2.1 Lead

The primary routes of exposure to lead at the IKEA site are inhalation and incidental ingestion. Lead adversely affects numerous body systems and causes forms of health impairment and disease which arise after periods of exposure as short as days or as long as several years. Chronic overexposure to lead can cause severe damage to blood-forming, nervous, urinary, and reproductive systems. Lead in construction is specifically regulated by Cal-OSHA in Title 8, CCR 1532.1. Lead exposures will be maintained below the 0.03 milligram per cubic meter ($mg/m^3$) Cal-OSHA action level (AL) during field operations using a combination of engineering controls (dust suppression with water mist), safe work practices, and personal protective equipment.

### 3.2.2 Petroleum Hydrocarbons

Occupational exposure criteria for petroleum-hydrocarbon product identified at this site, including Bunker C fuel, hydraulic oil, diesel fuel, and oil and grease, have generally not been developed. The PEL for oil mist as a nonvapor particulate is 5 milligrams per cubic meter ($mg/m^3$). However, the toxicity of a petroleum compound is generally proportional to its viscosity. Highly viscous compounds such as heavy greases and oils, are considered to have only limited toxicity. Diesel fuel is considered by NIOSH to present no significant acute oral hazard; it has a toxicity rating of 0. Inhalation of diesel vapor causes transient irritation to mucous membranes and upper respiratory tract irritation. Inhalation of high concentrations of the vapor causes central nervous system depression. Prolonged skin contact with diesel fuel may result in dermatitis, due to defatting of the skin. Given the levels of diesel and oil in the soil at the site, exposure of field personnel to hazards associated with petroleum hydrocarbons is not anticipated.

### 3.2.3 PCBs

PCBs can affect the body via inhalation, eye or skin contact, and ingestion exposure pathways. Overexposure can result in irritation of the eyes, nose, and throat, and an acne-like skin rash. Chronic overexposure can cause liver damage. The overall potential for occupationally significant PCB exposure during implementation of the SMP is expected to be low. The low part-per-million concentrations detected in soil are not expected to result in significant airborne concentrations in the ambient air in excavation work areas.

## 3.3 Physical Hazards

The physical hazards associated with the field activities can present a greater risk of injury than the constituents in soils in the excavation areas. All activities within the scope of this project must comply with California and federal OSHA construction safety standards.

### 3.3.1 Head Protection

Field personnel will be required to wear hard hats while the field activities are being performed. Hats must be worn properly and not altered in any way that would decrease the degree of protection provided.

### 3.3.2 Foot Protection

Field personnel will be required to wear steel-toed safety shoes while the field activities are being performed. To afford maximum protection, all safety shoes must meet American National Standards Institute (ANSI) standards.

### 3.3.3 Eye Protection

Field personnel will be required to wear eye protection (safety glasses with side shields) while the field activities are being performed to prevent eye injuries caused by contact with chemical or physical agents.

### 3.3.4 Noise Protection

Field personnel will be required to wear hearing protection (ear plugs or muffs) in high noise areas (noise from heavy equipment) while the field activities are being performed. Sound level meters will be used to measure noise levels in the work area and along

the eastern fenceline. Hearing protectors will be required when noise levels exceed 90 decibels measured on the A-scale, or whenever noise is sufficient to cause people standing three feet apart to raise their voices to carry out a conversation. Abatement of the noise sources will be required when the eastern fenceline readings exceed 75 decibels measured on the A-scale continuously for a 5-minute period.

### 3.3.5 Heavy Equipment Limitations

Vehicles and heavy equipment will obey a speed limit of 10 miles per hour in the project area. Drivers and equipment operators will wear seat belts at all times. No riders will be allowed on heavy equipment or in vehicles unless seats and seat belts are available for their use. All vehicles shall be equipped with warning devices that sound automatically while the vehicle is backing.

### 3.3.6 Buried Utilities and Overhead Power Lines

Excavation locations will be examined by site personnel or a locator, and utilities will be protected during excavation activities. Underground Services Alert will be provided notice at least two days before beginning excavation. Protection from overhead power lines will be accomplished by maintaining safe distances of at least the amount shown below:

| Nominal Voltage of Line | Minimum Clearance (feet) |
|---|---|
| up to 50,000 | 10 |
| over 50,000 - 75,000 | 11 |
| over 75,000 - 125,000 | 13 |
| over 125,000 - 175,000 | 15 |
| over 175,000 - 250,000 | 17 |
| over 250,000 - 370,000 | 21 |
| over 370,000 - 550,000 | 27 |
| over 550,000 - 1,000,000 | 42 |

### 3.3.7 Excavations

Field personnel are prohibited from entering into excavations deeper than 5 feet below ground surface unless a Cal-OSHA excavation permit is obtained by the subcontractor and Cal-OSHA excavation regulations are observed. However, the SMP does not require that samples be obtained from within excavations. The contractor excavating the area in

questions will be responsible for preparing a site-specific excavation safety plan in accordance with 8 CCR 1539 et. al., including appropriate benching, shoring, or sloping.

### 3.3.8 Thermal Stresses

Adverse climate conditions are an important consideration in planing and conducting site operations. The effects of ambient temperature can cause physical discomfort, lost of efficiency, and personal injury, and increase the probability of accidents. One or more of the following recommendations will help reduce the risk of heat stress on the job site:

- Provide plenty of liquids to replace lost body fluids. Water, electrolytic drinks, or both will be used
- Establish a work schedule that will provide appropriate rest periods
- Establish work regimens consistent with the American Conference of Governmental Industrial Hygienists (ACGIH) guidelines
- Provide adequate employee training on the causes of heat stress and preventive measures

### 3.3.9 Other Physical Hazards

SMP implementation activities will necessitate walking on uneven and debris-strewn surfaces. Reinforcing bar (rebar) and other existing materials pose tripping obstacles, impalement, and puncture hazards throughout the area. Field personnel shall be cautioned above uneven surfaces, implement, tripping obstacles, and puncture hazards. Work areas will be cleared of such items as is reasonably possible.

### 3.3.10 Confined Space Entry Procedures

If entry in the excavation is required at depths greater than 4 feet, entry will be performed following the permit-required confined-space procedures in Title 8, CCR, Sections 5156 and 5157. At a minimum, pre-entry monitoring for methane, oxygen, and hydrogen sulfide will be required. Methane and hydrogen sulfide monitoring is required because these constituents are frequently present in Bay Muds. A Cal/OSHA excavation permit and suitable benching, shoring, or sloping as stated in section 3.3.7 is also required prior to entry.

- **Preentry**. If entry into a confined space becomes necessary, a written procedure will be developed. The procedures include planning, general precautions,

procedures, evaluation of hazards, ventilation requirements, personal protection, isolation and responsibilities. The Project Safety Coordinator will review, approve, and sign off on the written plan.

In addition to the written procedures, an entry checklist will be completed (EMCON Form #HS011, presented in Appendix A-2). The EMCON site safety officer will act as the entry supervisor and will be responsible for the checklist. The purpose of the checklist is to provide a detailed list of protective measures to take before entry. The checklist will be completed and signed by the site safety officer before a confined space entry begins. A copy of the entry checklist will be maintained in the project file for at least 1 year.

- **Entry and Working.** The atmosphere of each confined space will be tested before entry in the following order: oxygen, combustible gas, and toxic gas. The entire confined space area will be tested, if possible, including the areas around all irregular surfaces of the interior. All testing will be done from the outside, if possible. If personnel are not able to test all areas of the confined space, the initial entry must be with supplied air equipment. The atmosphere in the confined space must be evaluated thoroughly by a trained individual before workers enter the space.

  Action levels for oxygen and combustible gas are as follows:

  - oxygen: less than 19.5 percent or greater than 23.5 percent
  - combustible gas: more than 10 percent of the LEL
  - Hydrogen Sulfide: 1 ppm

  If these action levels are reached during initial monitoring, entry to the confined space will not be allowed unless the space is ventilated or approved respiratory equipment is used. Monitoring for toxic gases will be required, as appropriate, to characterize the potential toxicity of the confined space.

  The following entry and working procedures are also required:

  - A positive means of entry and exit (e.g., (sloped excavation sides) must be provided, as necessary.
  - Personnel entering the confined space must be provided with protective equipment. The region HSM will determine what protective equipment are appropriate to the work hazards.

- A minimum of three employees must be in attendance for a confined space entry: the employee entering the confined space; and H&S attendant, and a third person for emergency assistance. The H&S attendant must remain at the entrance to the confined space during the entire entry. He/she must be physically able and fully equipped to implement emergency procedures. Visual contact, or another means of communication, between the H&S attendant and the confined worker must be maintained at all times. The third person must maintain line-of-sight contact with the attendant. In case of an emergency, he is responsible for enlisting outside assistance.

- In a potentially flammable atmosphere, measures must be taken to reduce the possibility of sparks. Only explosion-proof electric tools and lights and nonsparking hand tools may be used in potentially flammable atmospheres.

- Because static charges can ignite flammable vapors, bonding and grounding of metallic parts may be require din potentially flammable atmospheres.

- No smoking is allowed in confined spaces.

- A chest or full body harness with a retrieval line must be attached to the center of the entrant's back near shoulder level or above the entrant's head.

- Wristlets can be used in lieu of the chest or full body harness if the harness is not feasible or if it creates a greater hazard.

- The retrieval line must be attached to a mechanical device at a fixed point outside the confined space for immediate rescue, if necessary.

- A mechanical device must be used for vertical permit spaces that are greater than 5 feet in depth.

- Emergency rescue procedures, if necessary, must be performed from outside the confined space. In no instance must the H&S attendant attempt to enter the confined space for rescue unless additional personnel, properly equipped and trained, are present.

# 4 AIR MONITORING

Air-quality surveys shall be required during the SMP implementation project to evaluate airborne concentrations of contaminants with regard to prescribed action levels. Air-quality monitoring requirements for total dust are described below. Personal lead exposure levels shall also be quantified, as necessary, to confirm compliance with established PELs.

## 4.1 Dust Monitoring

Most of the soil excavated during this project is expected to be damp or wet since groundwater at the site is relatively shallow. Some material may be dry, however, and create dust.

Total dust levels shall be measured continuously during excavation activities using portable aerosol monitoring devices. The action level for total dust during excavation of soils shall be 1.5 $mg/m^3$. Although lead-impacted soils have been removed from the site, the total dust action level was established assuming a soil lead concentration of 19,900 mg/kg (see Appendix A-1), which is the maximum lead value formerly detected in site soils. Using this maximum, the calculated concentration of lead in 1.5 $mg/m^3$ of total dust would be below 0.03 $mg/m^3$, which is the AL for occupational exposure to airborne lead. Lead levels in petroleum hydrocarbons- or PCB-impacted soils could be between 2,000 and 5,000 mg/kg. The dust action level during excavation of petroleum hydrocarbon- or PCB-impacted soil will be 6 $mg/m^3$ to prevent lead exposure.

If the total dust action level is exceeded continuously for a 5-minute period, personnel will be required to wear half- or full-facepiece air purifying respirators with high-efficiency particulate filter cartridges. Whenever total dust levels approach this action level, dust abatement using water spray shall be initiated. Field operations shall be conducted so that off-site migration of nuisance dust is prevented during excavation operations.

## 4.2 Exposure Monitoring

If necessary, lead exposures shall be quantified following the sampling and analysis procedures in method 7105 of the *NIOSH Manual of Analytical Methods,* U.S. Department of Health and Human Services (NIOSH Publication No. 84-100, 3rd Edition, February 1984 with supplements through August 15, 1990). Personal air samples will be collected from individuals working in areas where respiratory protection is required. Samples will be analyzed at an American Industrial Hygiene Association (AIHA) accredited laboratory. Blank samples will accompany samples submitted for analysis.

## 4.3 Calibration and Recordkeeping

Aerosol monitoring instruments cannot be field calibrated. Any instruments used on site must have received factory calibration within the previous twelve months or the manufacturer's recommendation, whichever is less. Pumps used to collect samples for lead analysis will be calibrated before and after use using an electronic bubble flow meter. All calibration data and monitoring results will be recorded by the site safety coordinator in field notebooks.

# 5 PERSONAL PROTECTIVE EQUIPMENT

The potential hazards from exposure to lead, petroleum hydrocarbons, and PCBs will be minimized by using the appropriate PPE. The minimum level of protection selected for the project is Level D, as defined by the USEPA (July 1988). Level D protective equipment is used on sites that have been investigated and characterized as posing occupationally insignificant skin or respiratory hazards. The level may be upgraded at the project area as specified by the site safety or project safety coordinator. Dermal protection will be required when direct contact with potentially impacted materials is possible (i.e., soil sampling) to prevent unnecessary exposure. The air monitoring results (Section 4) will be used to determine the level of respiratory protection required. Air monitoring results for the RAP indicated that workers were not overexposed to lead. Dust levels did not exceed the action levels of 1.5 $mg/m^3$ in the lead-impacted areas or 6.0 $mg/m^3$ in the diesel-, HBHC-, and PCB-impacted areas.

The following PPE must be worn during all field activities associated with this project:

- Safety glasses or goggles
- Hardhat
- Steel-toed boots

The following PPE will be readily available, for use if necessary:

- Half- or full-facepiece respirators with high efficiency particulate filter cartridges (readily available if their use is required based on total dust monitoring criteria)
- Latex inner gloves (as needed)
- Neoprene or Nitrile outer gloves (as needed)
- Latex boot covers (as needed)
- Particulate Tyvek® outer garment (as needed)

EMCON has produced a new Corporate Respiratory Program Guideline in accordance with the revised OSHA regulations at 29 CFR 1910.134. The draft Guideline was completed in October 1998, and internal review of the document by the Corporate Director of Health and Safety was completed on December 4th. The draft is being finalized and will be distributed to EMCON personnel as part of the first quarter 1999 HAZWOPER refresher courses to be completed throughout the country.

In summary, the Guidelines require all employees who use respirators:

- Attend an initial training session and annual refresher training sessions. The training will include: a discussion of the standard; a review of respirator types; proper methods for selection, use, and maintenance of respirators; review of medical surveillance requirements; and respirator limitations

- Any employee using a tight-fitting facepiece must pass a qualitative or quantitative fit test for that exact make, model, and size of facepiece at least annually. Respirator fit testing shall follow the procedures described in Occupational Safety & Health Administration (OSHA) Standards 29 CFR 1910.134 App. A - Fit Testing Procedures.

- Employees must be enrolled in EMCON's annual medical surveillance program prior to using respirators or being fit tested

Only NIOSH/MSHA approved respiratory protective equipment shall be used.

# 6 SITE ACCESS

Routine access to and from the facility shall be accomplished through the gate located on Shellmound Street. Unauthorized personnel and visitors shall not be allowed access to the facility. Only personnel with specific operational duties should be present on the site when field operations are being conducted. Site control at the soil stockpiles shall be established using barricades, cones, and flagging tape as necessary to prevent unauthorized access during work.

# 7 DECONTAMINATION

Work zones shall be established and maintained to provide controlled and safe working conditions during soil excavation and sampling activities. An exclusion/potential contamination zone (Zone I) will be maintained around ongoing excavation areas. This zone shall be delineated in the field with barricades and flagging tape. A single point of entry/exit will be provided for workers. Potentially impacted soil stockpiles will be included in the Zone I classification until field soil sample testing has been performed. A potential contamination/reduction zone (Zone II) will be maintained outside the entrance to Zone I. Zone II will contain facilities for decontamination described below. Due to the nature of utility trench excavation, Zones I and II will be transitory and will follow excavation and backfilling progress. A support/clean zone (Zone III) will be maintained outside Zone II. It is not practical to provide a map detailing the boundaries of Zones I, II, and III because these zones will change location as utility trench excavations progress and are backfilled.

## 7.1 Equipment Decontamination

Decontamination procedures will be performed before leaving the work areas as part of the system for preventing or reducing the physical transfer of impacted materials from the project area. All reusable equipment will be rinsed or steam-cleaned. The excavation equipment will be cleaned by dry-brooming and washed if necessary before it is removed from the excavation area. The exteriors of trucks used to transport the excavated soil to the disposal facility shall be dry-broomed by the subcontractor before they depart the project area, consistent with the City of Emeryville requirements.

Wash tubs with soap and water and rinse tubs will be provided for cleaning of reusable equipment.

Water from various activities as specified above will be placed in a storage tank. The water will be treated and discharged to the storm sewer system or will be disposed of at a permitted facility in conjunction with water generated from excavation dewatering, if any, by the excavation contractor. The water will be analyzed for the chemicals of concern.

## 7.2 Personnel Decontamination and Sanitation

Personnel will remove any disposable personal protective equipment (PPE) as they leave the excavation area (Zone I). Disposable sampling equipment and PPE will be disposed of with the impacted soil. During soil excavation and sampling activities, EMCON will provide a portable handwashing facility including soap, water, and towels. A supply of clean potable water and drinking cups will also be provided. All personnel will be required to wash their hands before eating and after work to prevent ingestion of any site soils.

Sanitation facilities (toilets) shall be provided by the contractor for the duration of the project.

# 8 GENERAL SAFE WORK PRACTICES

General safe work practices will be discussed during weekly "Tail-Gate" safety meetings to be conducted at the site, and periodically as necessary during the job if changing conditions warrant more frequent updates. The meetings will be conducted by the site safety coordinator.

The planned topics for the meetings will include: (1) potential equipment hazards, (2) potential chemical hazards, (3) necessary personal protective equipment, and (4) procedures to follow in the event of an accident. In addition the safe work practices described below will be discussed during the "tail-gate" meeting.

## 8.1 Safe Work Practices

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in any area where the possibility of contamination exists.

2. Hands must be thoroughly washed when leaving a contaminated, or suspected contaminated area, before eating, drinking, or any other activities.

3. Impacted PPE will not be removed from the exclusion area until it has been properly containerized.

4. Removal of materials from PPE by blowing, shaking, or any means that may disperse materials into the air is prohibited.

5. Personnel on site must use the "buddy" system when wearing respiratory protective devices. Emergency communications will be prearranged in case unexpected situations arise. Visual contact must be maintained between "pairs" on site, and each individual should remain close enough to assist the other in an emergency.

6. Personnel will be cautioned to inform each other of subjective symptoms of chemical exposure, such as headache, dizziness, nausea, and irritation of the respiratory tract.

7. No excessive facial hair that interferes with a satisfactory fit of the face piece-to-face seal will be allowed on personnel required to wear respiratory protective equipment.

8. On-site personnel will be thoroughly briefed about the anticipated hazards, equipment requirements, safety practices, emergency procedures, and communications methods, initially and in briefings.

9. All field personnel will, whenever possible, locate themselves so that they work upwind from the excavation area.

10. Field personnel are prohibited from entering trenches or excavations deeper than 4 feet unless the excavation and confined-space provisions of Title 8 CCR are addressed. Open trenches or excavations that are unattended will be guarded or covered.

## 8.2 Safe Workplace Conditions

1. A multipurpose (A, B, C) portable fire extinguisher and other emergency response equipment must be located in the immediate vicinity of the work area.

2. Field equipment must be kept in good condition.

3. First-aid supplies must be available in the project area.

4. Appropriate work areas designated for support, contamination reduction, and exclusion will be maintained.

5. Cellular telephones must be provided by the subcontractor to facilitate communication in an emergency.

# 9 EMERGENCY PROCEDURES

Illnesses, injuries, or accidents occurring during the field activities must be reported to the project safety coordinator or project engineer, and attended to immediately. The contractor shall ensure that at least one person holding up-to-date certifications in basic first aid and CPR is present at the site during site operations.

A first-aid kit will be available for treatment of minor injuries such as cuts or bruises that may result from an accident. In an emergency or hazardous situation involving explosions, fires, or major physical injuries, the individual who observes this condition will immediately give a verbal alarm. Upon hearing the alarm, field personnel will safely de-energize nonessential equipment and evacuate to a suitable upwind location. The injured personnel must be attended to immediately and medical attention must be obtained. If the injuries were sustained within Zone I (exclusion/potential contamination zone), personal protective equipment shall be removed within Zone II (potential contamination/reduction zone) prior to transport off site. If required, the injured personnel will be transported to the hospital by ambulance. The field activities will be suspended until the cause of the injury has been investigated and the work procedures modified accordingly. An accident/loss report will be completed for any illness, injury, or accident that occurs during the field activities. The site safety coordinator shall report to the project safety coordinator or project engineer for instructions.

The telephone numbers of local emergency services are given in Table B-2. Maps with directions to the Emeryville Readicare Industrial Medical Clinic from the IKEA facility are shown for reference in Figure B-1. A portable cellular phone shall be maintained by the site safety coordinator for contacting emergency services.

The contractor shall contact the Emeryville Readicare Industrial Medical Clinic to ensure that the facility is willing and is capable of providing necessary medical support for the potential site hazards identified in Section 3 of this health and safety plan. The contractor shall provide the DTSC with written verification of such contact prior to the start of site excavation activities.

# 10 TRAINING

All personnel performing the field activities will have received the initial safety training required by OSHA in 29 CFR Part 1910.120 and Title 8, CCR, Section 5192. Current refresher training status will also be required for all personnel engaged in the field activities. Documentation that this training has been completed will be provided to IKEA upon request. During the field activities, safety meetings will be held by the project or site safety coordinators to review specific health and safety aspects of the scheduled work.

# 11 MEDICAL MONITORING

All personnel scheduled for field activities will have completed medical examinations meeting the minimum medical surveillance requirements described in 29 CFR, Part 1910.120, and Title 8, CCR, Section 5192. Blood lead monitoring will not be performed because overexposure to lead during the remedial action activities is not anticipated. If the exposure monitoring results described in Section 4.2 indicate that field personnel have been exposed to lead above 30 micrograms per cubic meter, then blood lead monitoring will be performed and the results will be provided to the employee.

# 12 SITE HEALTH AND SAFETY PLAN SIGNATURES

I have reviewed the HSP for implementation of the SMP at the site and immediate vicinity. I understand its purpose and consent to adhere to its policies, procedures, and guidelines for this project while an employee of EMCON or a contractor to IKEA.

| Name (please print) | Date | Signature |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

# REFERENCES

American Conference of Governmental Industrial Hygienists. 1989. *Documentation of Threshold Limit Values and Biological Exposure Indices.*

California Code of Regulations. Title 8.

Danby, John G. 1988. *Site Safety Plan Guidance Document for Site Assessment and Site Mitigation Projects.* California Department of Health Services, Toxic Substances Control Division (now the Department of Toxic Substances Control).

Jim Rock and Keith Tait, *A Tool Box of Mathematical Models for Occupational Exposure Assessment*, American Industrial Hygiene Conference and Exposition, May 1994.

National Institute for Occupational Safety and Health, Occupational Safety and Health Administration, U.S. Coast Guard, U.S. Environmental Protection Agency. 1985. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.* October.

Preliminary Endangerment Assessment Guidance Manual, Department of Toxic Substances Control, January 1994.

U.S. Department of Health, Education, and Welfare. 1977. *Occupational Diseases: A Guide to Their Recognition.* 29 Code of Federal Regulations. Parts 1910 and 1926.

U.S. Department of Health and Human Services. 1994. *NIOSH Pocket Guide to Chemical Hazards.*

U.S. Environmental Protection Agency. 1988. *Standard Operating Safety Guides.* July.

U.S. Environmental Protection Agency, *Chemical Engineering Branch Manual for the Preparation of Engineering Assessments.* Office of Toxic Substances, Washington, D.C. February 1991.

U.S. Environmental Protection Agency, *Compilation of Air Pollution Emission Factors - Volume 1: Stationary Point and Area Sources*, Research Triangle Park, North Carolina, July 1994.

## Table B-1

## Health Hazard Information for Constituents

| Metal | Maximum Concentrations Detected in Environmental Soil/Fill Samples (mg/kg)[1] | PEL[2] ($mg/m^3$)[3] | IDLH[4] ($mg/m^3$) | Routes of Entry[5] | Acute Exposure Symptoms[5] |
|---|---|---|---|---|---|
| Lead | 19,900 | 0.05 | 100 | Inhalation, ingestion | Irritation of mucous membranes, weakness, low-weight, abdominal pain, anemia, colic |
| Petroleum Hydrocarbons | 29,000 | 5.0[6] | 2,500 | Inhalation, contact | Irritated eyes, skin, respiratory system |
| Polychlorinated Biphenyls | 140 | 0.5[7] | 5 | Inhalation, absorption, ingestion, contact | Irritated eyes, chloracne reproductive effects, liver damage |

[1] mg/kg = milligrams of contaminant per kilogram of soil/fill material
[2] PEL = permissible exposure limit given in Title 8, California Code of Regulations, Section 5155
[3] $mg/m^3$ = milligrams per cubic meter
[4] IDLH = immediately dangerous to life and health
[5] Routes of entry and acute exposure to symptoms given in NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, June 1994
[6] The PEL for oil mist nonvapor particulate is listed
[7] The PEL for Aroclor 1254 is listed

## Table B-2

## Emergency Telephone Numbers

| Emergency Service Contact | Telephone Number |
|---|---|
| Fire Department | 911 |
| Police Department | 911 |
| Ambulance | 911 |
| Readicare Industrial<br>Medical Clinic, 1350 Ocean Avenue<br>Emeryville, California | (510) 652-5800<br>(Emergency Room) |
| Environmental Protection Agency<br>Emergency Response Section<br>For emergency notification of spills | (415) 744-2000<br>(24 hours) |
| Cal-OSHA District Office (Oakland) | (510) 568-8602 |
| Poison Control Center for San Francisco County<br>For emergency medical questions concerning toxic and hazardous chemicals | (800) 523-2222 |

## Table B-3

## Estimated Constituent Concentrations in Air
## Barbary Coast Steel Site

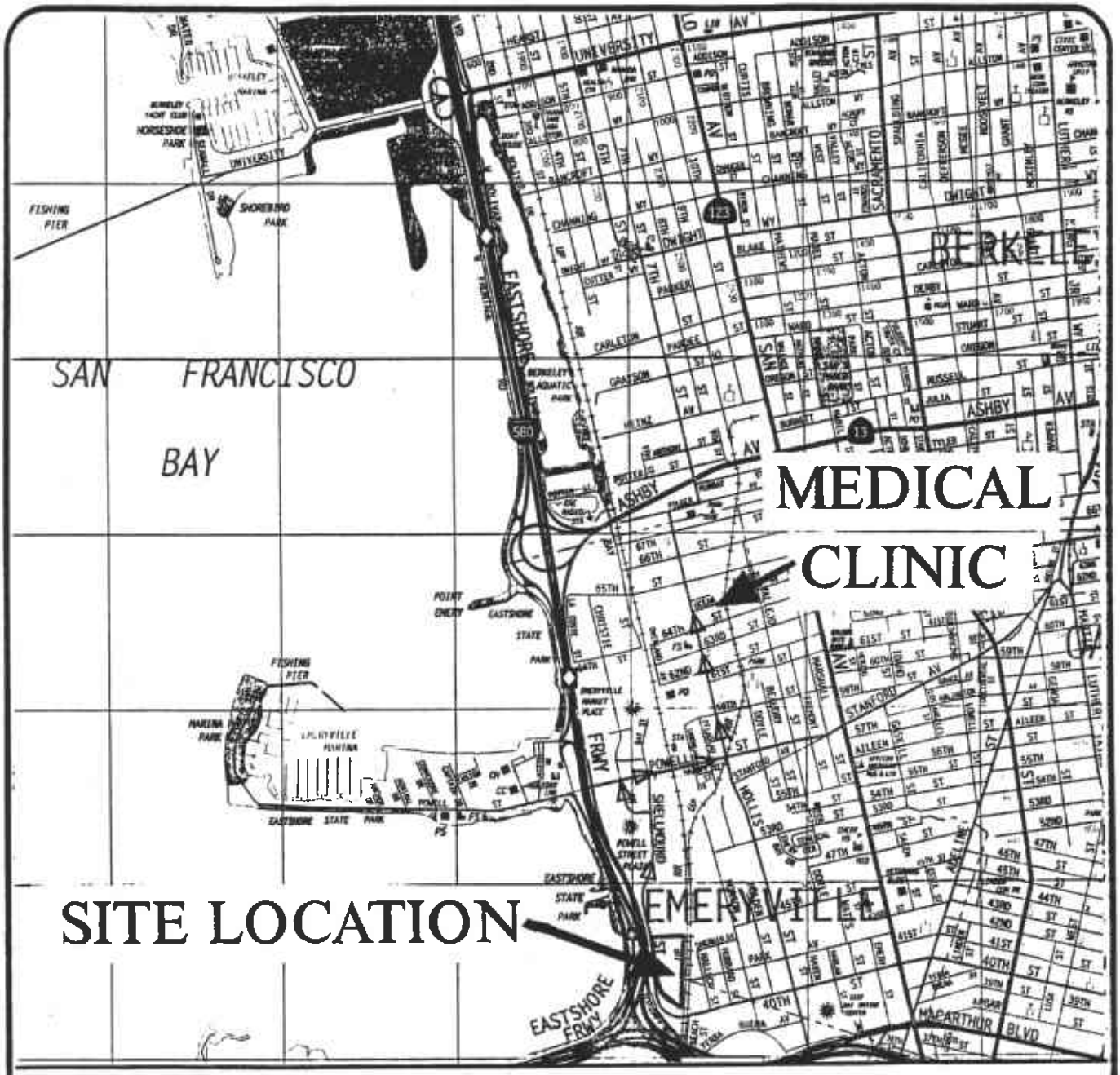
| Constituent | Maximum Concentrations Detected in Environmental Samples (mg/kg)[1] | Estimated Constituent Concentrations in Air ($mg/m^3$)[2] | | | Cal-OSHA PEL[4] ($mg/m^3$) |
|---|---|---|---|---|---|
| | | 2.5 mph[3] | 7.5 mph | 12.5 mph | |
| Lead | 19,900 | 0.04 | 1.79 | 3.48 | 0.05 |
| Petroleum Hydrocarbons | 29,000 | 0.06 | 2.61 | 5.07 | 5.0[5] |
| PCBs | 140 | 0.0003 | 0.013 | 0.025 | 0.5[6] |

1. mg/kg = milligrams per kilogram
2. $mg/m^3$ = milligrams of constituent per cubic meter of air
3. mph = miles per hour
4. PEL = permissible exposure limits listed in Title 8, California Code of Regulations, Section 5155
5. The PEL for oil mist as nonvapor particulate is listed
6. The PEL for Aroclor 1254 is listed

Table B-4

Summary of Potential Hazards Associated
with Soil Excavation and Sampling Activities

| Potential Hazards | Activity | | |
|---|---|---|---|
| | Soil Excavation | Soil Sampling | Decontamination |
| Chemical Exposure (lead, hydrocarbons, PCBs) | X | X | X |
| Dust exposure | X | X | |
| Falling objects | X | X | |
| Noise | X | X | |
| Slips, Trips, and Falls | X | X | X |
| Thermal Stress | X | X | X |
| Refer to the text of the Health & Safety Plan for more information | | | |




Emeryville Readicare Industrial Medical Clinic
1350 Ocean Avenue
Emeryville, CA (510) 652-5800

North on Shellmound Street. Turn left on Christie Avenue to Powell Street. Right on Powell Street; left on Hollis Street; right on Ocean Avenue. Medical clinic is on the north side of the street between Hollis and Doyle.

0 2000 4000

SCALE IN FEET

N

EMCON

DATE NOV. 1997
DWN KAJ
APP
REV
PROJECT NO.
2175-001.001

**FIGURE B-1**
IKEA PROPERTY, INC.
4300 EASTSHORE HIGHWAY
EMERYVILLE, CALIFORNIA

**EMERGENCY MEDICAL FACILITY LOCATION**

EA-SANJOSE-CAD/DRAWINGS I:\2175001\SITELOC.dwg Xrefs: <NONE>
Scale: 1 = 1.00 DimScale: 1 = 1.00 Date: 12/4/97 Time: 9:32 AM Operator: KAJ

# APPENDIX B-1

# DUST EMISSION ESTIMATES

# DUST EMISSION ESTIMATES

Dust emissions from excavation operations may occur at several points in the cycle, such as placement of the soil into stockpiles and disturbances by strong wind currents. Emissions are a function of the quantity of material excavated, moisture content, and proportion of aggregate fines. The following analysis of dust emissions is based on soil impacts prior to the remedial action work. The action levels established based on this analysis will be used during site development activities even though impacted soils have been removed from the site and exposure to lead-, PCB-, and petroleum-impacted soils is not expected.

The quantity of particulate emissions generated during soil excavation may be estimated using the following empirical expression[1]:

$$E = K(0.0032)\frac{(\frac{U}{5})^{1.3}}{(\frac{M}{2})^{1.4}}$$

where: E = emission factor, lbs/ton
K = particle size multiplier, dimensionless
U = wind speed, mph
M = moisture content, %

For the BCS project, a default value of 15% moisture content was selected[2]. The actual moisture content of the soils excavated during implementation of the BCS RAP is expected to be significantly higher than 15 percent because water spray will be used to suppress dust. Please note that the equation assumes that the silt content of the excavated soil will be between 0.44 and 19 percent. Also note that the actual size distribution of the excavated soil would be necessary to evaluate the quality of the equation and objectively assign a particle size multiplier. EMCON conservatively assigned a 0.74 particle size multiplier for particles less than 30 microns.

Emission factors during excavation operations were calculated at three different wind speeds. The average wind speed at the site is 7.5 miles per hour. The quantity of soil

---

1 U.S. Environmental Protection Agency, Compilation of Air Pollution Emission Factors - Volume 1: Stationary Point and Area Sources, Research Triangle Park, North Carolina, July 1994.

2 Preliminary Endangerment Assessment Guidance Manual, Department of Toxic Substances Control, January 1994.

excavated and loaded was assumed to be 500 tons per day over an 8-hour work day. Using these assumptions, emission rates at the different wind speeds are provided below.

- $5.73 \times 10^{-5}$ pounds per ton (lb/ton) or 27.1 milligrams per minute (mg/min) at 2.5 miles per hour (mph) wind speed
- $2.39 \times 10^{-3}$ lb/ton or 1,130 mg/min at 7.5 mph wind speed
- $4.65 \times 10^{-3}$ lb/ton or 2,197 mg/min at 12.5 mph wind speed

A Gaussian dispersion model for a spherical emission was used to convert emission rates into ambient concentrations. The Gaussian dispersion model used seeks to predict equilibrium airborne concentrations downwind from an emitting source. The equation for the Gaussian dispersion model is[3]

$$C = \frac{G}{4\pi D r} \exp\left[-\frac{\mu}{2D}(r - x)\right]$$

where: C = particulate concentration, $mg/m^3$
G = generation rate, mg/min
D = eddy diffusivity, $m^2/min$
r = distance from the source, m
u = air velocity, m/sec
x = downwind distance from the source along the centerline of the air flow, m

Eddy diffusivity has a measured range of 0.1 to 4 square meters per minute ($m^2/min$), a typical value of 1.0 was used for the BCS site estimate. The concentrations at different wind speeds were estimated assuming that field personnel will be 1.0 meters downwind from the excavation operations. Estimated particulate concentrations are listed below:

- 2.15 $mg/m^3$ at 2.5 mph wind speed
- 89.9 $mg/m^3$ at 7.5 mph wind speed
- 174.8 $mg/m^3$ at 12.5 mph wind speed

Using these estimated particulate concentrations, airborne constituent concentrations at the different wind speeds were calculated using the following equation.[4]

$$C_1 = C_2 Y$$

---

[3] Jim Rock and Keith Tait, A Tool Box of Mathematical Models for Occupational Exposure Assessment, American Industrial Hygiene Conference and Exposition, May 1994.

[4] U.S. Environmental Protection Agency, Chemical Engineering Branch Manual for the Preparation of Engineering Assessments. Office of Toxic Substances, Washington, D.C., February 1991.

where: $C_1$ = estimated airborne constituent concentration
$C_2$ = particulate concentration, $mg/m^3$
Y = weight fraction of constituent in the soil

EMCON used the maximum concentrations of constituents detected in soil samples as the upper bound concentrations of constituents that may be present in excavated soils. Table B-3 of the plan summarizes estimated metal concentrations in air at the different wind speeds. Also included in the table are California Division of Occupational Safety and Health (Cal-OSHA) permissible exposure limits (PELs) for the listed constituents. The PELs listed in Table B-1 are defined as the time-weighted average concentrations for a nominal 8-hour work day and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

Except for lead, the estimated concentrations of constituents are below PELs indicating that the constituents in soil are not likely to pose occupational health risks to site personnel during excavation operations. The ambient lead concentration estimates indicate that control of fugitive dust will be required during excavation of lead-impacted soils to prevent occupational exposure.

Dust emissions during excavation operations are expected to be significantly lower than estimated because water mist will be used, as necessary, to suppress dust. Emission factors decrease as the moisture content of the soil is increased. Ambient lead dust concentrations will be lower than estimated because the average concentration of lead in soil will be less than 19,900 mg/kg. Measurement of total dust levels and control of dust emissions will be required during excavation of lead-impacted soils. The total dust action level during excavation of lead-impacted soils will be 1.5 $mg/m^3$. The estimated lead dust concentration in 1.5 $mg/m^3$ of total dust is 0.03, which is below the 0.05 PEL and equivalent to the 0.03 occupational exposure AL. The total dust action level for excavation of PCB and petroleum hydrocarbon impacted soils will be 6 $mg/m^3$.

# APPENDIX B-2

# CONFINED SPACE ENTRY CHECKLIST

# CONFINED SPACE ENTRY CHECKLIST

| Name | Project No. |
|---|---|
| oj. Description | Date |

nployees Assigned _____

_____

_____

_____

_____

otective Measures

1. Have employees been trained? _____
2. Combustible gas level (recorded in percentage of LEL) _____
3. Oxygen level (recorded in percentage of atmosphere) _____
4. Organic vapor analyzer reading (ppm total hydrocarbons) above background level _____
5. Detector tube reading for $H_2S$ _____ _____

   Mechanical ventilation used _____ _____

   Electrical equipment grounded and insulated _____ _____
8. Measure implemented to reduce static charges _____
9. Protective equipment necessary:
   - Respiratory _____
   - Clothing _____
   - Gloves _____
   - Boots _____



10. Emergency procedures:
    - Safety harness/life lines _____
    - Self-contained respiratory protection _____
    - Communications _____
    - Observation _____
    - Fire extinguisher _____
    - First aid kit _____
    - Map with directions to nearest hospital _____
11. Written procedures for confined space available _____

| l Supervisor | Region HSM | Date |
|---|---|---|
| | | |

# APPENDIX C

# TRAFFIC PLAN

EMCON
1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

December 11, 1997
Project 22175-001.001

Mr. Randy Souza
Traffic Section Supervisor
Emeryville Police Department
2449 Powell Street
Emeryville, California 94608

Re: Addendum to "Truck Route - Barbary Coast Steel" letter dated July 19, 1996

Dear Mr. Souza:

On behalf of IKEA Property, Inc. (IKEA) EMCON submits to the Emeryville Police Department this notification of planned soil transport from the IKEA property at 4300 East Shore Highway in Emeryville (site). IKEA purchased the site from BCS in September 1997 and plans to develop the site in summer 1998. It is unknown how many trucks would be leaving the site, however, the development project will occur between June and October 1998.

In our letter (attached) to the Emeryville Police Department, dated July 19, 1996, we described the route and procedures that were followed by trucks that were removing soil from the former Barbary Coast Steel (BCS) site between July and October 1996. Soils will be transported consistent with this July 19, 1996 letter.

Please call if you have questions.

Sincerely,

EMCON

Annette Duffey
Project Manager

Attachments: "Truck Route - Barbary Coast Steel" letter dated July 19, 1996

cc: Charles Keller; IKEA Property, Inc.
Henry Van Dyke; City of Emeryville
Ted Park; Cal-EPA, Department of Toxic Substances Control
Dan Heath; Diablo Transportation Company

EMCON
1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

July 19, 1996
Project 20G01-001.011

Mr. Randy Souza
Traffic Section Supervisor
Emeryville Police Department
2449 Powell Street
Emeryville, California 94608

Re: Truck Route - Barbary Coast Steel

Dear Mr. Souza:

This letter describes the route and procedures that will be followed by trucks that will be removing soil from the Barbary Coast Steel in Emeryville, California. Approximately 30 truck loads per day will be leaving the site for a period of approximately one week in late July or early August 1996. The soils will be transported by a licensed waste hauler. The trucks will be covered using tarps or similar covers and will be swept clear of loose soil before they leave the site.

The trucks will enter and exit the site by the routes shown on the attached Figure 1. The routes were discussed with Captain Dennis Neal (Emeryville Police Department) on July 18, 1996 and approved by Captain Neal. Trucks leaving the site will use the route shown on Figure 1 to access Highway 980 and then connect to Highway 880. From Highway 880, the trucks will use freeways and interstates to travel to the disposal facilities. The trucks will return from the disposal facilities using Highways 980, 580 and Interstate 80. They will exit Interstate 80 at Powell Street and follow the surface streets shown on Figure 1.

After discussions with Captain Neal, it was determined that it is not necessary to restrict the truck traffic during any specific times during the day. After discussing the indicated route with Captain Neal, he indicated that traffic control is not necessary and that he would inform the Oakland Police Department of the truck routing.

Based on a discussion with Henry Van Dyke on July 19, 1996, it is my understanding that I do not need to attend the Traffic Committee meeting on July 23, 1996.

Thank you for your help in arranging this activity. Please call if you have questions.

Sincerely,

EMCON

Mark Smolley

Mark Smolley
Project Manager

Attachments: Figure 1 - Truck Routes

cc: Bart Kale - Birmingham Steel Corporation
Henry Van Dyke - City of Emeryville
Ted Park - Department of Toxic Substances Control
Dan Heath - Diablo Transportation Company

# APPENDIX D

# SAMPLING PROCEDURES

# APPENDIX D

# SAMPLING PROCEDURES

EMCON's sampling and analysis procedures are designed to provide consistent and reproducible results and ensure that the objectives of the sampling and analyses program are met. This appendix contains procedures for sampling and evaluation of quality control results.

The following publications were used as guidelines for developing these procedures:

- Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (EPA SW-846, 3rd edition, November 1986)
- Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (EPA-600/4-82-057, July 1982)
- Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020, revised March 1983)

## Sample Collection

Sample collection procedures include equipment cleaning, sample handling, sample documentation, and chain-of-custody record. Sample preservation (water and soil) is not required for total petroleum hydrocarbons as diesel or polychlorinated biphenyls.

### Equipment Cleaning

The bottles, caps, and septa used to hold samples for volatile and semivolatile organic analysis are triple-rinsed with high-purity deionized water and dried overnight, the bottles at 200°C, the caps and septa at 60°C. The bottles, caps, and septa are protected from solvent contact between drying and use at the site.

The plastic bottles and caps used to hold water samples for metals analysis are soaked overnight in a 1 percent nitric acid solution, triple-rinsed with deionized water, and air-dried.

Equipment for sampling soil (i.e., trowels and hand augers) is first disassembled, cleaned thoroughly with diluted detergent, and rinsed with deionized water, and air dried.

## Sample Handling

Sample containers are labeled immediately after sample collection, and are kept on cold packs which are replaced daily until the containers are received at the laboratory. As a sample is collected, it is logged on the chain-of-custody record that accompanies samples to the laboratory.

Samples are transferred from the site to EMCON's laboratory by the sampling team. Laboratory personnel assign a different number to each sample container and the number is recorded on the chain-of-custody record and used to identify the sample on all subsequent internal chain-of-custody and analytical records. Within 24 hours of sample receipt, samples are routinely shipped from EMCON to laboratories performing the selected analyses. EMCON's laboratory manager ensures that the holding times for requested analyses are not exceeded.

## Sample Documentation

The procedures for sample handling provide chain-of-custody control from collection through storage. Sample documentation includes the following:

- Field logbooks for documenting sampling activities in the field
- Labels for identifying individual samples
- Chain-of-custody records for documenting possession and transfer of samples
- Laboratory analysis requests for documenting analyses to be performed

## Labels

Sample labels contain the following information:

- Project number
- Sample number (i.e., well designation)
- Sampler's initials
- Date and time of collection
- Type of preservative used (if any)

### Sampling and Analysis Chain-of-Custody Record

The sampling and analysis chain-of-custody record, initiated at the time of sampling, includes the sample designation, sample type, analytical request, date of sampling, the name of the sampler, and other information deemed pertinent. The sampler signs his name and records the date and time on the record sheet when transferring the samples to another person. Custody transfers are recorded for every sample; for example, if samples are split and sent to more than one laboratory, a record sheet accompanies each sample. The number of custodians in the chain of possession is kept to a minimum. A copy of the sampling and analysis chain-of-custody-record is returned to EMCON with the analytical results.

### Analytical Methods

Samples collected as part of the proposed monitoring programs are analyzed by accepted analytical procedures. The following publications are the primary references:

- Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020, revised March 1983)
- Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (EPA-600/4-82-057), July 1982)
- Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods (EPA SW-846, 3rd edition, November 1986)
- Leaking Underground Fuel Tank (LUFT) Manual, State Water Resources Control Board, State of California Leaking Underground Fuel Tank Task Force, May 1988

The laboratories performing the analyses are certified by the Department of Health services (DHS) for hazardous waste testing.

## Evaluation of Laboratory Quality Control Results

Selected laboratory quality control (QC) data are evaluated to assess the acceptability of the analytical data. QC results are included with analytical reports.

## Laboratory QC

The following laboratory QC results (data quality indicators) are requested from the laboratory performing the analyses to allow EMCON personnel to evaluate the analytical results and assess the accuracy and precision of the data:

- Extraction and analysis dates (as appropriate) to allow the holding-time criteria to be evaluated
- Method blank results
- Surrogate spike results (for gas chromatographic [GC] analyses)
- Matrix spike (MS) and duplicate matrix spike (DMS) results
- Method reporting limits (MRLs)

Analyses will be performed by Columbia Analytical Services, Inc. (CAS), of San Jose a California-certified laboratory. Although a review of these data quality indicators does not verify the reported compounds and concentrations, it can be used to assess the acceptability of the analytical data. Analytical results are produced by procedures consistent with CAS' Quality Assurance Manual.

## Holding Time

Recommended holding times are established by the U.S. Environmental Protection Agency (USEPA) and refer to the maximum time allowed to pass between sample collection and extraction or analysis by the laboratory. These limits assist in determining data validity and usability.

## Laboratory Method Blanks

Laboratory method blanks are analyzed daily for every parameter except pH. The method blank is a sample of analyte-free laboratory water that is processed through the entire analytical system using procedures identical to those used for the environmental samples. The method blank results are used to assess the effect of the laboratory environment on the analytical results. The method blanks are used to assess the effects of the laboratory environment on the analytical results, and to identify false positives.

## Surrogate Standards

Surrogate standards are added (spiked) to each environmental and QC sample for GC analysis. Surrogates are compounds similar to the parameters of interest in chemical

composition, extraction, and chromatography, but not normally found in the environmental samples. Known quantities of a surrogate (or surrogates) are added to each sample for GC analysis. The results are reported as percent recovery and can be used to assess the effect of the sample matrix on the analysis and analytical accuracy. The acceptance limits for surrogate spike recovery are established by the USEPA or the laboratory performing the analysis.

### Matrix Spike and Duplicate Matrix Spike

MS and DMS samples are analyzed by the laboratory at a frequency of approximately 10 percent and are used to assess analytical accuracy and precision. A selected sample is spiked in duplicate with known concentrations of selected parameters from the method parameter list. The MS and DMS recoveries are used to assess accuracy. Accuracy is reported as percent recovery and is a measure of the bias in a system. The RPD between the MS and DMS results is used to assess precision (reproducibility). Precision is a measure of the random error in a system. Together, the accuracy and precision data can be used to assess the effect of the sample matrix on the analysis. The acceptance limits for spike percent recovery and RPD are established by the USEPA or the laboratory performing the analysis.

### Method Reporting Limits

MRLs are the minimum amounts of analytes that analytical systems can routinely and reproducibly distinguish from background system noise. If there are matrix interferences or if a sample must be diluted to quantitate the most concentrated analyte observed, actual MRLs may sometimes exceed those routinely used. All concentrations above the MRLs are quantitated and reported.