BES

BLOCK ENVIRONMENTAL SERVICES

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RISK MANAGEMENT PLAN
O.N.E. COLOR COMMUNICATIONS
AND
GREENCITY LOFTS

February 2002

Prepared for:

ONE Color Communications
1001 42nd Street
Oakland, CA 94608

And

GreenCity Lofts
4050 Adeline Street
Emeryville/Oakland, CA

Prepared by:

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March 4, 2002

MAR 11 2002

Ms. Susan Hugo
Alameda County Health Care Services
1131 Harbor Bay Parkway, 250
Alameda, CA 94502

R073

Subject: Risk Management Plan for the FormerDunne Quality Paints Property and ONE Color Communications

R079

Dear Ms. Hugo.

Enclosed is a copy of the Risk Management Plan (RMP) for the subject properties. The purpose of the RMP is to attain closure for both properties. As you may be aware, the former Dunne paint property is in the process of being developed by Green City Lofts. Unfortunately, they cannot obtain construction funding until closure is obtained from the County. They had hoped to initiate the project by early April.

Do not hesitate to contact me if we can provide additional information or respond to your staff comments.

Very truly yours,
Block Environmental Services, Inc.

Ronald M. Block, Ph.D., REA
Principal Toxicologist

cc: Mr. Chuck Headlee
California EPA
San Francisco Regional Water Quality Control Board
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Mr. Martin Samules
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A. EXECUTIVE SUMARY

The subject of this Risk Management Plan (RMP) are two adjacent properties, the ONE property, and the former Dunne Quality Paints property. The properties are located at 1001 42nd Street and 1007 41st Street, on the Oakland /Emeryville border, in Alameda County, California. The ONE property was formerly used by Boysen Paints as a paint and varnish manufacturing company. A portion of the site was occupied briefly by a furniture refinisher. Site activities on the former Dunne Paints property include latex paint manufacturing and blending, varnish production, warehouse and office space. The property, and surrounding properties, are currently used for light industrial, commercial and residential purposes. Both Dunne and Boysen Paints stored mineral spirits on the site.

GreenCity Lofts proposes to build 62 live/work lofts on the former Dunne Paints property. These units will be grouped into 5 separate buildings. The height of these buildings will vary between 3 and 5 stories. The unit sizes will range between 600 and 1500 square feet, and will be available as studios, one, or two bedroom units. The plan is to demolish existing structures and build several units and a parking structure. No further development is anticipated for the ONE property.

This RMP was prepared by Block Environmental Services (BES) to determine the potential health and ecological risks associated with exposure to residual contamination in the soil and groundwater at the site.

Numerous subsurface investigations were conducted at the site to characterize contamination in both soil and groundwater. Both the Regional Water Quality Control Board and the Alameda County Department of Health Services identified Total Petroleum Hydrocarbons mineral spirits as the only chemical of concern for the site. Residual TPH mineral spirits was found in the groundwater at both the ONE and Dunne Paints properties. Groundwater investigations from the site, as well as, from neighboring property California Linen, conclude the contaminant plumes are not migrating. TPH mineral spirits was also detected in some soil samples collected from the property.

Consistent with current and future land use, exposure pathways were determined. Due to the fact that the properties are completely paved (with the exception of a small 2x3 foot patch of exposed soil on the former Dunne Paints property), no surface water exist on the property, and groundwater at the site is not used. Therefore no complete exposure pathway exist under current land use.

Exposure pathways were also examined for future scenarios due to the plans to demolish the current structures on the Former Dunne Paints property to develop live/work lofts equipped with parking amenities. In lieu of deed restrictions restricting groundwater usage, the greatest potential risk for exposure is identified as the on-site workers during demolition activities.

Complete exposure point concentrations can not be quantified due to the nature of the chemical of concern. Complete information regarding a detailed composition of mineral spirits in the

environment, or it's toxicity, is not available. Therefore, no indicator chemical can be selected as a surrogate to quantitatively assess risk due to exposure. A Health and Safety Plan has been developed to minimize any exposure to the chemical residue during demolition activities.

1 INTRODUCTION

This Risk Management Plan has been prepared by Block Environmental Services (BES) on behalf of ONE Color Communications and the former Dunne Quality Paints, to asses the human health risks associated with chemical residues that have been detected in the soil and groundwater at the subject property. This report addresses two adjacent properties which collectively comprise the site. The ONE property is located at 1001 42nd Street, and the former Dunne Quality Paints property is located at 1007 41st Street, on the Oakland/Emeryville border. The ONE site was previously owned and occupied by Boysen Paints.

GreenCity Lofts proposes to build live/work lofts on the former Dunne Paints property. The plan is to demolish existing structures and build several units and a parking structure. No further development is anticipated for the ONE property.

The basis of this Risk Management Plan are site investigations prepared by various consultants on behalf of ONE Communications, former Dunne Paints, and California Linen, as well as, terms and conditions approved by the Regional Water Quality Control Board and the Alameda County Health Services. The reports, described in detail elsewhere in this document, provide quantitative and qualitative information on the nature and distribution of the chemical residues at the property, along with hydrogeological site characterization data.

The overall purpose of the RMP is to identify and evaluate the potential for adverse effects to human health that could result from exposure of chemical residues identified as existing at the site.

The specific objectives for achieving this overall goal are to:

1. Select representative chemicals of concern from among the inventory of chemicals identified as present in soil and groundwater at the site;

2. Identify all potential routes of exposure, if any, to chemical residues present;

3. Estimate the intake of residual chemicals that might be absorbed into the human body; and

4. Characterize any human health risks resulting from estimated theoretical exposures to chemical residues originating from residues of chemicals of concern at the site.

The only chemical identified as a chemical of concern for this Risk Management Plan, agreed upon by the Regional Water Quality Control Board and Alameda County Health Services, is Total Petroleum Hydrocarbons mineral spirits. Estimated health and ecological risks are intended to provide the necessary basis for obtaining regulatory closure of the site without further investigation or cleanup of residual contamination at the site.

This risk management plan contains the following:

- a description of the site background, including a brief site history and a summary of residual COC's in site soil and groundwater;
- a description of GreenCity Lofts' planned redevelopment; and
- construction risk management protocols to be implemented during site redevelopment

2 SITE BACKGROUND

For the purpose of this Risk Management Plan, the study area in which there may be potential for human and ecological exposure to the chemical residues present in on-site soil and in the groundwater, is comprised of two properties, ONE Color Communication, situated at 1001 42nd Street, and the former Dunne Quality Paints, located at 1007 41st Street on the Oakland/Emeryville border approximately 1 mile east of the San Francisco Bay in Alameda County, California. (Figure 1).

Extensive soil and groundwater investigations have been conducted on the subject property and an adjacent facility, California Linens located on the southeast corner of 41st and Linden Streets at 989 41st Street in Oakland. These investigations were prompted by the existence of underground storage tanks (USTs) used for chemical storage on the three facilities (Figure 2). Dunne and Boysen Paints used USTs for the storage of mineral spirits (a.k.a. paint thinner or stoddard solvent) while California Linen used USTs for the storage of # 5 fuel oil, regular gasoline, and unleaded gasoline. Investigations confirmed residual contamination in groundwater samples taken from the three properties.

Gasoline and mineral spirits are both classified as light petroleum distillates with the majority of each compound's carbon chains in the size range of C1 to C15 (Uhler, 1998). Diesel and kerosene are mid-range compounds, generally ranging from C10 to C22. Each class of compounds have distinctive profiles, namely, distributions and proportions of carbon chains. However, it is impossible to distinguish quantitatively between TPH as mineral spirits and either gasoline or diesel within a range. In addition, the Hydrocarbons have degraded over the years making exact identification impossible. This leads to inconclusive laboratory data regarding the specific type of petroleum hydrocarbon present on each property.

Due to the proximity and the fact that Boysen Paints and Dunne Paints each stored mineral spirits, it is impossible to examine the groundwater with respect to only one of the two properties. However, California Linens stored gasoline and diesel products which can generally be separately identified due to the association with BTEX compounds. Analyses of the laboratory data supports the conclusion the contamination from California Linen's former USTs has not commingled with plumes associated with former USTs at Dunne Paints or the former Boysen Paint Property.

The property use has not changed in over 10 years. The site's predominantly low-permeability Bay Mud and small groundwater gradient have kept the plume confined to the site.

The Alameda County Department of Health Services approved BES's conclusion that the plume from California Linen does not contribute to the risk from the subject site. Therefore this Risk Management Plan is based on potential risk from the ONE and former Dunne Paints facilities only.

BES concluded that the site appears to be suitable for risk-based closure based on several factors:

- Source material has been removed from the former underground storage tank areas;
- The type of contamination at the site;
- The limited potential for contaminant migration;
- Further site remediation is economically infeasible;
- Natural degradation of contaminants appears to be occurring; and
- Site contamination does not pose an adverse risk to human health and the environment due to incomplete exposure pathways.

3 CHARACTERIZATION OF THE STUDY AREA

This section presents background information about the Study Area that is directly relevant to the Risk Management Plan. Included is information regarding historical and present activities related to chemical usage and releases, information on the physical features of the Study Area, a summary of the chemical residues found in the Study Area, and information concerning population densities and demographics in the area of interest. The information contained in this section is derived principally from previous site investigation reports. Specifically these documents are:

4 M Construction letter with laboratory data to Alameda DEH; July 21, 1987.

Environmental Services, Inc. Soil report letter to Dunne Quality Paints, January 25, 1988.

Dunne letter to RWQCB; February 12, 1988.

OHM; *Field Investigation of an Underground Storage Tank, Former Grow Group Facility*; March 29, 1988.

Hunter/Gregg; *Underground Tank Removal Report for SEMCO at Dunne Quality Paint*; November, 1988.

California Linen letter to Gil Wister, Alameda DEH; March 23, 1989.

Robert J. Miller Co. letter to Alameda County Health; April 25, 1989.

Miller Environmental Company; *Report on Subsurface Investigation*; Prepared for California Linen; November 3, 1989.

Miller letter to Gil Wistar, Alameda DEH; November 21, 1990.

Blymer Engineers, Inc.; *Level I Environmental Site Assessmen*t, Prepared for Dunne; Junel1, 1991

Aqua Terra Technologies; *Groundwater Analytical Data*; Prepared for ONE; January 8, 1992.

Hageman-Aguiar, Inc.; *Report of Limited Soil Investigation*; Prepared for Dunne Paints; June 22, 1992.

ESC; *Underground Storage Tank Closure and Supplemental Soil and Groundwater Investigation Report, Former Boysen Paint Facility*; August 16, 1993.

Fetter, C.W.; *Applied Hydrogeology*; 3rd edition; Prentice Hall, Inc.; 1994.

ESC; *Underground Storage Tank Closure and Supplemental Soil and Groundwater Investigation Report, Former Boysen Paint Facility*; August 16, 1993.

Fetter, C.W.; *Applied Hydrogeology*; 3rd edition; Prentice Hall, Inc.; 1994.

ESC; *Groundwater Monitoring Report, Former Boysen Paint Facility*; March 7, 1994.

BES letter report to Brian Oliva, Alameda DEH; September 14, 1994.

BES sump closure letter report to Susan Hugo, Alameda DEH; November 27, 1995.

National Assessment Corporation (NAC); *Phase I Environmental Site Assessment*; Prepared for ONE, 1001 42nd Street; March 19, 1998.

BES letter workplan to Susan Hugo, Alameda DEH; June 8, 1998.

Uhler, Allen D., McCarthy, Kevin J., and Stout, Scott A.; "Get To Know Your Petroleum Types"; *Soil and Groundwater Cleanup*; July, 1998.

BES; *Evaluation of Site Contamination and Recent Groundwater Sampling ONE, Dunne Paints, California Linen*, February 25, 1999.

BES; *Groundwater, Soil & Air Sampling Results ONE, Dunne Paints, California Linen,* July, 2000

BES; *Environmental Site Assessment Former Dune Paints,* December 11, 2000

3.1 SITE DESCRIPTION

The site is located approximately one mile east of the San Francisco Bay on the north edge of Oakland, with the Oakland/Emeryville common boundary passing through the ONE and Dunne Paints Properties. The site includes Assessor Parcel Numbers (APN), 12-1023-1-1, 49-1023-5-2, 12-1022-1, 12-1022-2, and 49-1022-1.The site vicinity and site location are shown in Figures 1 and 2.

The ONE property consists of three brick buildings with mortar exterior walls, and an asphalt parking area. The buildings include a 40,000 sq ft two story office/design building, a 2,000 sq ft maintenance and storage shop, and a 7,000 sq ft storage facility.

The former Dunne Paints facility consists of several adjacent buildings constructed between 1923 and 1978. The property includes a paved parking lot bordering Adeline Street, attached to a paved driveway on the southern portion of the property. The facility is currently used for office space, storage, and commercial purposes. The site is covered with concrete except for the asphalt

parking lot.

3.2 HISTORIC SITE USE

The earliest records on file at the City of Oakland Building Permits Records Department, for the One property, contained information on a renovation of the site buildings in 1936 by Walter Boysen Paint Company (NAC, 1998). Original building permits and permits dated prior to 1936 were not available. The property was occupied from the mid 1930s to1990 by Boysen Paints, a paint and varnish manufacturer. In the early 1980s, Boysen Paint merged into the Ameritone Paint Corporation, a subsidiary of Crow Group. In May 1981, Mr. and Mrs. Kozel purchased the property from Crow Group. Boysen ceased operations in 1990 and ONE began operating a printing business on the property. A portion of the property was occupied by Rockridge Antiques from the late 1980s to 1993, who used part of the etching room for refinishing antiques.

The former Dunne Paints property consists of three separate parcels, two in Oakland and one in Emeryville. The Alameda County Recorder's Office maintains deeds recording the purchase of the property by Frank W. Dunne from James and Mary Tavares dating July, 9 1923. Previous records date the transfer of the property to the James and Mary Tavares in 1917. The earliest city records on file for Oakland and Emeryville at the Oakland Public Library list Frank W. Dunne Company as the occupant of a portion of the property from 1923 to 1979. There were no listings for the remainder of the property until the 1981 records list Frank W. Dunne Company and Dunne Paint Company as the occupants of the portion of property on 41st Street, and Frank W. Dunne as the occupant on the Adeline Street portion. The Dunne Paint Company was listed as the occupant on the property from 1984 to 1991 with a distinction between the Dunne Paint Store on Adeline and the Dunne Paint Company Office on 41st Street. A building permit for a warehouse addition and retail store were on record at the Emeryville Building Department dating back to March, 8 1978. Six other permits from the 1984 to 1986 were on file for renovations, fixtures, installation of a heat pump, ducts, and sprinklers. Earlier records were not available. (Blymyer 1991).

Aerial photographs from the years 1930, 1947, 1950, 1957, 1963, 1969, 1975, 1979, 1985, 1990, and 1996 were reviewed at Pacific Aerial Surveys Photograph Library in Oakland on November 28, 2000.

The 1930 photo was clouded but the surrounding property was clearly mixed residential, industrial, and commercial. The 1947 photo revealed a large warehouse bordering 41st Street to the north, and a vacant undeveloped lot to the west, on the portion of property bordering Adeline and 41st Street. A railroad right-of-way spanned the southeastern portion of the property. A building was visible on the adjacent property to the southwest. Above ground tanks were visible in the 1950 photo, on the property to the south of the warehouse and on the adjacent properties to the north at the facility across 41st street, and to the east on the property across the street. Photographs from 1957 on revealed automobiles parking on the previously vacant section. By the 1963 photograph, the railroad right-of-way was removed and replaced with a building. The

1969 photo revealed development to the west of the warehouse bordering 41st street. An additional building was clearly seen adjacent to the warehouse in the 1979 photo. The parking lot now appeared to be paved. The above ground tanks on the property to the north are no longer visible in the 1985 photo. The area is clearly transformed to a loading dock by 1990. The tanks on the former Dunne paints property have been removed by the 1996 photo.

Sanborn Insurance Company maps were reviewed at the University of California Berkeley's Map Room on December 8, 2000. Maps dating 1903, 1911 and 1951 were reviewed. A building is visible on the property in the 1903 map. The type of building was not identified. The map from 1911 shows four residential buildings . The 1951 map reveals several buildings owned by the Frank W. Dunne Company. The buildings included a paint warehouse, a loading dock, a varnish kitchen and storage building, a print mill, and a storage yard.

The property was used by Dunne Paints for paint manufacturing from 1923 until the early 1990s. A retail store owned by Dunne was added in the 1980s. Site activities included paint manufacturing, latex manufacturing and blending, varnish production, warehouse space, and office space. Locations are shown in Figure 2. After Dunne Paints ceased activity, the property was occupied by a silk screen business (Cynder Block), poster print business, and a furniture refurbisher (Top Coat). The retail store was converted to office space used by a large appliance distributor, LCI. LCI used warehouse space to receive and store large appliances before they were shipped to a purchaser. Site uses are shown in Figures 2-4.

3.3 PREVIOUS INVESTIGATIONS

3.3.1 ONE

At least two former underground storage tanks (USTs) were associated with the ONE property. A 10,000 gallon UST that had stored mineral spirits (a.k.a. paint thinner or stoddard solvent) was located in the truck loading area. This tank was excavated in the first half of 1987. Two soil samples collected from below the former UST indicated concentrations of total hydrocarbons of 6.5 and 43.5 mg/kg, of benzene of 0.07 mg/kg and non-detect, of toluene of 0.6 mg/kg (both), and of xylenes of 17.6 and 4.3 mg/kg (4M Construction, 1987). A monitoring well, MW-LD4, was installed adjacent to the loading dock. Details of the removal of this tank and the date of well installation are unknown. It appears that MW-LD4 was constructed in the excavation pit using the same methods as for MW-D1 and MW-D2, described later in this report.

In 1987, O.H. Materials Corp. (OHM) began investigating a UST located under the sidewalk along 41st Street. The tank was reportedly used by the former Boysen Paint Company to store mineral spirits. Following a ground penetrating radar survey for underground utilities and the installation of a temporary monitoring well during 1988 and 1989, approximately 610 gallons of solvents, sludge, and water were pumped from the tank and disposed of in April, 1990. In May, 1990 monitoring well MW-B1 was installed at the western end of the UST. Compounds detected in the first groundwater sample collected included 57,000 µg/L of Total Petroleum

Hydrocarbon (TPH) of unknown type and 11.4 µg/L of methylene chloride (ESC, 1993). On September 30, 1991, Aqua Terra Technologies (ATT) collected groundwater samples from MW-B1 (identified as MW-41st in their report) and MW-LD4 (ATT, 1992). The laboratory analysis for MW-B1 indicated 18,000 µg/L TPH-g, 29,000 µg/L kerosene, 5.6 µg/L toluene, 250 µg/L ethylbenzene, 980 µg/L total xylenes, and non-detect for all volatile organic compounds (VOCs), and halogenated organic compounds, including methylene chloride.

In May 1993 ESC began activities to close the tank in place. After removing the sidewalk and fill, the tank was measured to have a capacity of 8,000 gallons. Signs of weakness and holes were found in the tank piping and soil discoloration was observed in the product-line trench. Approximately 25 tons of soil were excavated from above the tank and hauled for disposal. Soil samples collected in the excavation pit around the tank and piping contained TPH matching the mineral spirit standard, however the samples were not quantified using this standard. The samples did not contain detectable levels of VOCs except for low levels of xylenes (400 to 800 µg/L) in the west, east, and pipeline soil samples. A total of 39 cubic yards of cement slurry was pumped into the tank to fill it. The excavation pit was backfilled with pea gravel and the sidewalk replaced.

ESC installed three more monitoring wells (MW-B2, MW-B3, and MW-B4) in May of 1993. These wells are all located in 41st Street and nearly form a line running east to west. On June 10, 1993 and again on September 29, 1993 ESC sampled the five monitoring wells on ONE property, as well as two wells on California Linen property and two wells on Dunne Paints property. Results from both sampling events did not indicate detectable levels of VOCs in any wells at ONE. The September sample analysis was the only one to quantify levels of TPH as mineral spirits, indicating concentrations of 290,000 µg/L in MW-B2, 43,000 µg/L in MW-B1, and between 700 and 2,400 µg/L in the remaining wells at ONE.

A stormwater drainage system at ONE included two steel-lined concrete sumps located adjacent to the former truck loading area. Rockridge utilized a trough in this area to strip furniture using a solvent mixture containing methylene chloride. Sludge found in the bottom of the smaller sump was sampled by ESC in May 1993. ESC reported Total Petroleum Hydrocarbons (TPH) concentrations as a non-gasoline mix at 130,000 µg/L, toluene concentration at 1,100 µg/L, ethylbenzene at 1,400µg/L, xylene at 14,000 µg/L, trichloroethylene (TCE) at 460 µg/L and methylene chloride at 17,000 µg/L in the sludge found at the bottom of the sump (ESC, August, 1993). The larger sump contained about 110 gallons of liquid, which was removed from the sump on August 10, 1993. The liquid was manifested and sent for recycling by Rockridge. ONE sampled and analyzed the liquid waste in the sump using EPA Method 624. The liquid contained 79,000 µg/L methylene chloride, 12,000 µg/L TCE, and trace amounts of 1,2-dichloroethylene (DCE).

BES conducted a field investigation in 1994 to determine whether methylene chloride or TCE had contaminated soil or groundwater adjacent to the sumps. This involved drilling a boring adjacent and downgradient to the sumps, collecting soil samples at 3 and 8 feet below ground surface (bgs), and installing a monitoring well (BES-1). No halogenated VOCs (including

methylene chloride and TCE) were found in the groundwater above the method detection limit. However, TCE was found in the three-foot soil sample at 9.5 µg/kg and in the eight-foot soil sample at 13 µg/kg. TPH as diesel and as mineral spirits were found in the groundwater, and TPH as mineral spirits was found in the eight-foot soil sample. Based on the data from this investigation, it was concluded that the sumps held their integrity since methylene chloride was not detected in soil or groundwater (BES, 1994). The two sumps were cleaned and filled with concrete in October 1995. A closure report for the sumps was submitted to ADEH in November 1995 (BES, 1995).

Methylene chloride was detected in the groundwater in only one well at one sampling event in May 1990. No other sampling events have detected methylene chloride or any other halogenated organic compounds in any groundwater wells at the site.

3.3.2 Dunne Paints

Dunne Paints owned six USTs for storing mineral spirits. The tanks were located under the sidewalk on the south side of 41st Street (Figure 3). Four connected tanks of 6,000, 3,000 (2), and 2,000 gallons buried under the western half of the sidewalk were in use for approximately 20 years up to the time of their removal. Two 4,000 gallon tanks located near the eastern end had not been used for over 35 years prior to their removal (Dunne, 1988).

Environmental Services, Inc. conducted a preliminary soil investigation in January 1988. An analysis of 12 soil borings adjacent to the tanks indicated high concentrations of TPH as mineral spirits in the vicinity of all six tanks. The tanks were removed on July 18 and 19, 1988 by SEMCO Construction Company. The 6,000 gallon tank (farthest to the west) had a small leak evident during removal, and both 4,000 gallon tanks (farthest to the east) were "badly damaged" with water streaming out of several small holes during removal. Approximately 60 cubic yards of petroleum hydrocarbon saturated soil and an unknown quantity of liquid was removed from the tank pits. Groundwater infiltrated the excavations at a depth of approximately 7 feet bgs, which prohibited sampling soil immediately below the former tanks (Hunter/Gregg, 1988).

Two monitoring wells, designated MW-D1 and MW-D2, were installed, one in each excavation pit, prior to backfilling. The wells were constructed in an unorthodox manner in order to facilitate groundwater sampling and in-situ treatment without the use of a drilling rig. The construction method consisted of suspending four-inch slotted PVC pipe to a depth of four feet below the tank bottom elevation in each pit while backfilling and compacting each pit with pea gravel to sub-grade. The top of each casing was sealed with concrete and fitted with a stovepipe, cover, and well box. Although the wells are shallow, they are screened sufficiently to intercept free floating product and to accommodate water table fluctuations.

Grab samples were collected from each well in August 1988, although the exact sampling procedure and purging method, if any, were not specified. The samples were analyzed only for TPH as mineral spirits, indicating concentrations of 1,000 µg/L in MW-D1 and 1,600 µg/L in

MW-D2. All subsequent sampling of MW-D1 has been non-detect for TPH as mineral spirits. As shown in Table A1, TPH concentrations in MW-D2 from January, 1989 to September, 1993 decreased incrementally from a concentration of 1,600 µg/L in August, 1988 to 220 µg/L in September, 1993. Therefore, by September 1993 concentrations of TPH as mineral spirits decreased by at least 86 percent in both wells.

Traces of ethylbenzene and toluene were detected in some groundwater samples collected up to April 1989, however in all subsequent sampling events these chemicals were non-detect. Levels of toluene and ethylbenzene in wells MW-D1 and MW-D2 were well below California State Water Resources Control Board (SWRCB) underground tank regulation action levels. Total xylenes were detected in both wells on three occasions, the last in February 1990. The highest concentration of total xylenes measured was well below the SWRCB action level for xylene. In each of three subsequent sampling events since February 1990, none of these BTEX compounds have been detected. No halogenated or volatile organic compounds were detected in either well in the June 10, 1993 and September 29, 1993 sampling events.

3.3.3 California Linen

Three former USTs located at California Linen were removed in February 1989 by Miller Environmental Company. These included a 2,500 gallon tank that contained #5 fuel oil, a 10,000 gallon tank that contained regular gasoline, and a 550 gallon tank that contained unleaded gasoline. Analytical results from soil samples collected from under the tanks after their removal indicated hydrocarbon contamination above RWQCB action levels in each excavation pit.

The soil sample collected from the western end of the 2,500 gallon tank pit contained 900 mg/kg TPH-d and 650 mg/kg oil and grease, while the sample from its eastern end was non-detect for both contaminants. A water sample taken from the excavation pit contained 520,000 µg/L TPH-d (Robert J. Miller Co., 1989). An undated, handwritten letter from Robert J. Miller Co. attached to a letter from California Linen to the ADEH dated March 23, 1989 indicates that contaminated soil was removed from this excavation pit and hauled to a disposal site (California Linen, 1989). No details are given as to the extent of over-excavation and no other soil sample data has been located. MW-3 was subsequently installed adjacent and downgradient to the former location of the 2,500 gallon tank. The well did not contain detectable levels of TPH as gasoline, diesel, or oil for four quarterly sampling events over a one-year period. Therefore, the ADEH approved the destruction of MW-3, which occurred in July 1991.

The soil sample from the southern end of the 10,000 gallon tank excavation pit contained 38 mg/kg TPH-g, and concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) of 0.23, non-detect, 0.56, and 1.8 mg/kg, respectively. The sample from the northern end of the 10,000 gallon tank was non-detect for each of these compounds, however a water sample collected from the excavation pit contained 1,200 µg/L TPH-g, and concentrations of BTEX at 240, 76, 40, and 200 µg/L, respectively (Robert J. Miller Co., 1989). According to Robert J. Miller Co., the ADEH granted approval to backfill the excavation pit on February 27, 1989

(California Linen, 1989). MW-2 was subsequently installed adjacent and downgradient to the former location of the 10,000 gallon gasoline tank. The well contained a detectable concentration of TPH (50 µg/L TPH-d in August 1991) in only one of eleven sampling events between October, 1989 and June 1993. Of the BTEX compounds, only toluene and total xylenes have been detected, and only in the March 1992 sampling event (1.1 and 3.3 µg/L respectively).

Initial soil samples from the southern end of the 550 gallon tank excavation pit contained 310 mg/kg TPH-g, and levels of BTEX of 5.3, 24, 7.6, and 45 mg/kg, respectively. A sample from the northern end also contained appreciable, though smaller, concentrations of each of these compounds. After over-excavation of the pit, two soil samples were collected, both of which proved to be non-detect for each of the compounds tested. MW-1 was installed adjacent and downgradient to the former location of the 550-gallon gasoline tank. This well consistently contained appreciable concentrations of TPH and BTEX compounds in each of the eleven sampling events mentioned above.

3.4 RECENT INVESTIGATIONS

Based on the previous investigations, BES collected groundwater, soil and air samples from the One and Dunne properties on December 14, 1999 for further characterization of the property necessary for the completion of a Health Risk Assessment, (HRA) for submittal to Alameda Health Services and the Regional Water Quality Control Board.

BES took depth to groundwater measurements, purged and collected groundwater samples from each of the seven remaining wells on and adjacent to the subject properties (MW-B2, MW-B3, MW-B4, MW-D1, MW-D2, MW-LD4, BES-1; locations are shown in Figure 5). Groundwater samples were analyzed for total petroleum hydrocarbons as mineral spirits and depth to groundwater was measured.

Table A and B include these results along with all other analytical results from previous site investigations. With the exception of MW-LD4, concentrations of TPH-ms were lower than those measured the previous year. MW-LD4 exhibited a significant increase, therefore an additional sample was collected on January 13, 2000 to confirm the results. The concentration of the sample taken in January was of the same order of magnitude as the December sample (Table A1).

Four temporary monitoring wells were installed and sampled to determine if TPH-ms contamination migrated downgradient to Adeline St, and to determine if current or past operations at Dunne paints have impacted the groundwater. Locations of samples, HP-1, HP-2, HP-3, and HP-4, are shown in Figure 4 . HP-1 was sampled on December 14, 1999, and HP-2 on December 15, 1999. Concentrations of TPH-ms were detected at 21,000 and ND<56 µg/l respectively. The appreciable concentration of TPH-ms in HP-1 prompted concerns of contamination. A second sample was taken from the same location on January 13, 2000 along with samples from HP-2 and HP-4. Concentrations of TPH-ms were detected at ND<50 67 and

470 respectively. Based on these results it appears TPH-ms contamination in groundwater has not migrated downgradient to Adeline Street.

BES collected soil samplers from two locations in the former varnish production portion of the former Dunne Paints property, currently housing a furniture restoration business. Prior to sampling, a concrete core was taken near a sampling location to assess soil for sampling. Three samples from two locations were analyzed; a surface sample and a sample at a depth of two feet from an exposed patch of soil (DS-0 and DS-2 respectively), as well as, a sample at a depth of three feet adjacent to a storm drain next to a former varnish kettle (DV-3). Samples were analyzed for metals (EPA Method 6010), volatile organic compounds (8260), and TPH as mineral spirits (8015). Analysis suggests the soil below the vent (DV-3) have not been affected by site activities, and the only organic detected was acetone, a common laboratory contaminant. Analytical results for DS-0 indicate detectable levels of metals, benzene, napthalene, xylene, and TPH-ms, 2.3, 3.1-32, 4.6, and 15,000 mg/kg. The contamination appears to be confined to the surface soils, indicated as DS-2 which only had a detectable concentration of TPH-ms (20 mg/kg). Organics and metal concentrations were significantly reduced.

Ambient and emission flux chamber samples were collected providing data concerning the emission of vapors from soil and groundwater into indoor air on the two properties. An indoor ambient sample (ONE-DESK) and a flux chamber sample (ONE-FLUX) were taken from the basement of the ONE office and printing building. A flux chamber sample (DUNNE-FLUX) was taken from the Dunne Paints building in a room formerly used for solvent mixing. Additionally, an ambient background sample (ONE-AMB) was collected just north of the ONE building. All samples except ONE-DESK were collected on December 15, 1999. ONE-DESK had to be re-sampled on January 13, 2000 due to a defective flow restrictor invalidating the original sample. Analysis of the background sample detected slight levels of methylene chloride, benzene, toluene, acetone, ethanol, and TPH-hexane, 3.1, 3.5, 11, 12, 8.9, and 43 mg/m^3 respectively. Slightly higher levels of these compounds, with the exception of benzene which was not detected in the ONE-Flux sample, were detected in the ONE-FLUX and DUNNE-Flux samples. Both samples detected higher levels of TPH-hexane, 750 and 1,800 mg/m^3 respectively, and acetone, 170 and 670 mg/m^3 respectively. Additional chemical detected in the ONE-FLUX sample include 2-propanol, and hexane, at 39 and 330 mg/m^3 . Additional samples detected in the DUNNE-FLUX sample include m,p-xylene, 2-propanol, 2-butanone, hexane, and cyclohexane, 5.7, 120, 12, 150, and 19 mg/m^3 respectively. MGK

3.4.1 Physical Features of the Study Area

3.4.1.1 Hydrogeologic Characterization

The site soils consist of Quaternary Alluvium overlying Franciscan bedrock. Bedrock is likely to occur at a depth of 50 feet or greater beneath the site, creating an impermeable aquitard, or perch, for groundwater. On this portion of the low-lying Bay Plain in close proximity to San Francisco Bay, the site soils can be expected to consist primarily of fine grain silts and clays, termed "Bay Mud". Bay Mud is predominantly composed of unconsolidated, olive gray, blue gray, or black

silty clay, created by the deposition of sediments carried by San Joaquin and Sacramento River. Permeability is generally low except where lenses of sand occur (Miller, 1989; Hageman-Aguiar, 1992).

3.4.1.2 Site Hydrogeology

Lithologic logs for borings drilled throughout the site indicate that the soil consist primarily of fine-grained sediments which fall into the category of Bay Mud. In a temporary well drilled to 20 feet bgs adjacent to the 8,000 gallon tank at ONE, soils were brown and gray clay for the entire depth, with increasing silt content beginning at 16 feet (OHM, 1988). Logs for MW-B2, MW-B3, and MW-B4 identify layers containing varying levels of gravel and silt as their primary constituents down to 14 feet bgs (ESC, 1993). Grading to finer particles, but still mostly sand, occurred to depths between 21 and 22 feet. Below this depth, clayey silt was observed in each well to final boring depths of 25 feet. The lithologic log for MW BES1 indicates silty sand to 7 feet, sandy silt to 24 feet, and clayey silt to 30 feet bgs (BES, 1994). Twelve soil borings drilled adjacent to each of the six Dunne USTs along 41st Street indicated predominantly clay soils to 6 to 10 feet and clayey sand and gravel from 10 to 17 feet bgs (Environmental Services, 1988). Six soil borings drilled throughout the Dunne property determined that soils are predominantly clay, though some borings encountered silt layers, and two indicated inter-bedded layers of sand and gravel from 10 to 12 feet bgs (Hageman-Aguiar, 1992. The lithologic logs for the three monitoring wells installed on the California Linen property (MW-1, MW-2, and MW-3), indicate a homogenous clayey lithology in all three borings, except for a sand lens between 3.5 and 4.0 feet in MW-3 (Miller, 1989). Monitoring well locations are shown in Figure 5.

Groundwater investigations imply a flow direction to the west. BES collected groundwater gradient data on December 10, 1998 from monitoring wells, MW-B2, MW-B3, MW-B4, MW-LD4, BES-1, MW-D2, MW-1, and MW-2. With the exception of MW-B4, the data indicates that the flow direction can generally be described as west, just as ESC determined in 1993. A determination of the north-south component of the groundwater flow direction is difficult given the locations of the existing wells and that MW-B1 no longer exists

Groundwater elevations measured by BES December 14, 1999 for monitoring wells MW-B2, MW-B3, MW-B4, MW-LD4, BES-1, MW-D1, and MW-D2, were nearly identical to those measured December 13, 1998, each differing less than 1 percent. A determination of the north-south component of the groundwater flow direction is difficult given the locations of the existing wells and that MW-B1 no longer exists. The fact that MW-B4 had the lowest elevation even though it is located almost linearly between MW-B3 and MW-B2 may indicate a localized condition brought about by the presence of a higher permeability layer (i.e. sand lens) within surrounding soils. This condition was also noted in 1998. Depth to groundwater ranged between 4.60 feet for MW-D1, to 10.98 for BES-1. The remaining wells depth to groundwater measured between 5.08 and 6.52 feet .

If a value is assumed for the hydraulic conductivity of the site's soils, the groundwater flow rate in an unconfined aquifer can be approximated using the Dupuit equation. The general range of

hydraulic conductivity for clay is 10^{-9} to 10^{-6} cm/s, for silt, sandy silts and clayey sands it is 10^{-6} to 10-4 cm/s, and for silty sands and fine sands it is 10^{-5} to 10^{-3} cm/s (Fetter, 1994). Using 10^{-5} cm/s as a conservative value for the site's Bay Mud soils yields a groundwater flow rate of 0.17 ft/yr.

hydraulic gradient at the site was determined to be 0.033 feet/foot to the east-northeast, with a conservative groundwater flow rate estimate, based on the site's soil characteristics, of 1.7 feet/year.

not conservative enough

3.4.1.3 Climatology/Meteorology

The climate of the east bay is generally temperate due to the proximity of the ocean. Climate data for the Oakland Museum station (Station No. 043083) indicates that mean monthly temperatures range from 50.9 degrees Fahrenheit (°F) in January to 80.1°F in July (Western Regional Climate Center, Reno, Nevada). Monthly high average temperatures range from 57.3°F in January to 74.6°F in September, while monthly low temperatures range from 36.2°F in December to 62.7°F in July.

The average annual precipitation for the area is 23.43 inches, with over 84% of it measured during November through March. In contrast, just over 1% of the total precipitation occurs during the months of June, July, and August. The rainiest month is January and the driest is July. ess than 2% of the total precipitation occurs during the months of June, July, and August.

The closest available station for wind data is the Oakland Airport. The prevailing winds originate from the west and average 9 mph, ranging from 6-11 mph. Winds of less than 7 mph occur 50% of the time.

3.4 GREENCITY LOFTS' PLANNED REDEVELOPMENT

GreenCity Lofts proposes to build live/work lofts on the former Dunne Paints property. The plan is to demolish existing structures and build several units and a parking structure. No further development is anticipated for the ONE property.

4 CONSTRUCTION RISK MANAGEMENT

4.1 SCOPE OF WORK /PLANNED SITE ACTIVITES

Site activity planned for the former Dunne Paints property includes the demolition of existing structures on the property for the construction of live/work lofts accompanied with parking amenities. Prior to demolition, approximately 9 cubic yards of soil contaminated with high concentrations of TPH as mineral spirits and metals will have to be properly disposed. The approximate 2 by 3 foot rectangular patch of exposed soil in the former varnish production area will be excavated to a depth of 1.5 feet. This soil will be taken to the appropriate landfill.

The buildings will be demolished and cleared from the property by a trained crew. After the former Dunne Paints property is destroyed, soil samples will be taken and analyzed for TPH mineral spirits prior to any excavation activities, to determine proper disposal options. Soil will need to be excavated and removed for the planned construction. The site footprints will be excavated and the soil removed and taken to proper disposal facilities. Ultimately all remaining soil on the site will be encapsulated by the new live/work lofts and parking structure.

Management of ground water during construction of the parking structure, will be done as follows: During excavation, soil will be removed up to a depth of 4 feet below ground water level. Shoring will be installed along the site perimeter as the soil are being excavated. When the water table is reached, ground water will be filtered and discharged off site? To minimize the extraction and intrusion of ground water from off site, a water proof membrane will be applied over the shoring.

During demolition and construction, workers will follow all prescribed methods and procedures to protect workers and adjacent community to hazardous conditions.

4.2 WORKER PROTECTION

Each construction contractor with workers who may directly contact Site soil or groundwater (e.g., during site preparation, demolition, excavation) will prepare its own site-specific health and safety plan ("H&SP), consistent with State and Federal Occupational Safety and Health Administration standards for hazardous waste operations (California Code of Regulations, Title8, Section 5192 and 29 Code of Federal Regulations 1910.120, respectively) and any other applicable health and safety standards. Each contractor will provide copies of its H&SP to GreenCity Lofts. Among other things, the H&SP will include a description of health and safety training requirements for on-site personnel, a description of the level of personal protective equipment to be used and any other applicable precautions to be undertaken to minimize direct contact with soil and groundwater.

Workers who may directly contact Site soil or groundwater will have the appropriate level of health and safety training and will use the appropriate level of personal protective equipment, as

determined in the relevant H&SP.

5 RISK ASSESSMENT

This section presents data and information to identify potential human health risks from exposure to residual chemicals of concern in soil and groundwater at the ONE Color Communication and former Dunne Quality Paints properties.

The only chemical identified as a chemical of concern for this RMP, agreed upon by the Regional Water Quality Control Board and the Alameda County Health Services, is Total Petroleum Hydrocarbons as mineral spirits.

5.1 TOXICITY ASSESSMENT

Extensive soil and groundwater investigations have been conducted on the subject property and an adjacent facility, California Linens, located on the southeast corner of 41st and Linden Streets at 989 41st Street in Oakland (Figure 2.)

California Linen stored # 5 fuel oil, regular gasoline and unleaded gasoline on the property. ONE and Dunne stored mineral spirits (a.k.a. paint thinner or stoddard solvent) in UST's on their properties.

Due to the differences in each compound's carbon chains, which gives a distinctive profile to each chemical it was possible to determine that the gasoline and diesel products from California Linen did not co-mingle with the plumes associated with former UST's at ONE or Dunne properties.

Complete exposure point concentrations can not be quantified due to the nature of the chemical of concern. Complete information regarding a detailed composition of mineral spirits in the environment is not available. Therefore, no indicator chemical can be selected as a surrogate to quantitatively asses risk due to exposure.

5.2 EXPOSURE ASSESSMENT

Exposure assessment, as defined by the National Academy of Science (NAS, 1983), is the process of measuring or estimating the intensity, frequency, and duration of human exposure to an agent currently present in the environment. "In its most complete form, exposure assessment should describe the magnitude, duration, schedule, and route of exposure; the size, nature, and classes of population exposed; and the uncertainties of all estimates". The magnitude of exposure is determined by measuring or estimating the amount of an agent available at the exchange boundaries (i.e. lungs, gastrointestinal tract, skin) during a specified time period.

5.2.1 Evaluation of potential exposure pathways

Based on the physical environment and human activity in the Study Area, exposure pathways considered potentially significant for the receptors of concern are considered in this section.

5.2.1.1 Former underground storage tanks

The former on-site underground storage tanks located under the sidewalk on either side of 41st Street are the only significant sources of contamination that have been identified at the site Figures 2-4). The only material known to have been stored in them is mineral spirits for use in manufacturing paints by both Dunne and Boysen Paints, which formerly occupied the site. All tanks were excavated and removed in 1987 and 1988, and some or all were confirmed to have leaked.

Groundwater samples from throughout the site have been analyzed for VOC's and various types of TPH. Except for a few concentrations of BTEX compounds above analytical detection limits, all samples have been non-detect for VOC's (Table A). Hydrocarbons detected in groundwater appear to most closely match the mineral spirits profile.

Soil and groundwater are known to be contaminated with TPH as mineral spirits. Areas of contamination, which occur under the ONE property, former Dunne Paints property, and sidewalks on either side of 41st Street, are completely paved with either concrete or asphalt.

Due to the plans to develop the former Dunne Paints property for live/work space, contamination in the soil can become a complete exposure pathway. Exposure to constituents in the soil could occur through the inhalation and ingestion of on-site soil and fugitive dust emissions, as well as, dermal contact with on-site soil.

Groundwater investigations have concluded the contaminated plume under the subject property is not migrating. BES concludes that based on existing measurements, the hydraulic gradient for the site averages between 0.01 and 0.03ft/ft in the western direction, although it may also have an appreciable north/south component. The gradient is not necessarily consistent over the site given the variation in composition and layers in the site's soils.

Previous reports provide quantitative and qualitative information on the nature and distribution of the chemical residues at the properties. Further groundwater investigations completed by BES revealed evidence supporting the observation TPH mineral spirit residue in groundwater plumes under ONE and former Dunne properties have not co-mingled with plumes from neighboring property, California Linens. Contamination was kept confined to the site due to the predominately low-permeability Bay Mud and small groundwater gradient. Due to the low permeability and variation in the layer compositions, movement of air and vapors through the soil matrix is hindered. Therefore inhalation of vapors originating from groundwater emissions is not a likely complete exposure pathway.

The most recent groundwater sampling, December 14, 1999, was generally consistent with previous sampling events: TPH mineral spirits concentrations were lower in all wells except for one. This trend is consistent with previous data implying the contaminants are naturally degrading.

Groundwater in the vicinity is not likely to be used for drinking purposes due t the lack of drinking water wells in the site vicinity, as well as, drinking water in the vicinity is known to be supplied from surface water sources originating in the Sierra Nevada mountain range. Therefore, ingestion of groundwater would not be considered a complete exposure pathway for the purpose of a risk management plan. In addition, it is known that a condition for site closure will be a deed restriction prohibiting the use of the site's groundwater.

No surface water is present at or near the site, and therefore dermal contact with contaminated water is not a potential exposure pathway.

In summary, pathways considered potentially significant for the receptors of concern in a developmental land use scenario include:

1. Pathways associated with soil
    - Ingestion of on-site soil and fugitive dust emissions
    - Dermal contact with on-site soil
2. Pathways associated with air
    - Inhalation of fugitive dust generated by wind erosion

5.2.1.2 Current Land Use

The ONE property consists of three individual buildings constructed with brick and mortar exterior walls. The buildings include a building used for printing design and office space, a building used as a maintenance and storage shop, and a building used for file storage. The remaining property is covered with concrete or asphalt and used for parking (NAC, 1998).

The former Dunne Paints property is divided into several adjacent buildings with a paved parking lot bordering Adeline Street attached to a paved driveway on the southern portion of the property. A two story building used as office space for a software company, M-Code is located at the western portion of the property facing Adeline St. Attached to the office building is warehouse space. Green City Development Group uses the space for a mailing address. Adjacent to the warehouse is storage space used by a construction company, West Mac Builders. Office space bordering 41st St is occupied by Spam Records. Commercial space bordering the Eastern portion of the property is currently leased to a small printing business, Icon Press, with printing areas extending behind the neighboring office space. Property and current tenants are shown in Figure 4 .

The area surrounding the subject site is a mix of commercial, light industrial, and residential properties. Currently, the property to the north across 41st street includes residences and ONE Color Communications, a printing company. Property to the east include California Linen Rental which has operated a linen supply rental service and commercial laundry at this location since October 1924. Directly south of California Linen Rental are residences. The property South of the include National Upholstering Co., which refurbishes furniture, warehouse space, and a natural foods grocery store. East of the property across Adeline St., is primarily residential. There is an elementary school on the corner to the northwest of the property.

5.2.1.3 Future Land Use

The Green City Lofts proposes to build live/work lofts on the former Dunne Paint property. The plan is to demolish existing structures and build several units and a parking structure.

Due to the variety of land uses in the area (i.e. industrial, commercial, and residential), specific locations will likely change, but it is unlikely that the land use characteristics of the overall Study Area will undergo any significant change.

5.2.1.4 Groundwater and Wells

BES contacted the California Department of Water Resources to determine if there are any wells located within 2,000 feet of the site. DWR stated that the only wells located within this radius are groundwater monitoring wells. DWR could not provide further information on the wells without either consent from the well owner or a request from a regulatory agency. Because there are no drinking water wells in the site vicinity and drinking water in the vicinity is known to be supplied from surface water sources originating in the Sierra Nevada mountain range, BES concludes that groundwater in the vicinity of the site is not and is not likely to be used for drinking purposes, and ingestion of groundwater would not be considered a complete exposure pathway for the purpose of a human health risk assessment (HRA). In addition, it is known that a condition for site closure will be a deed restriction prohibiting the use of the site's groundwater.

we can do this.

5.2.1.5 Surface Water

No surface water is present at or near the site.

5.3 RECEPTORS OF POTENTIAL CONCERN IN THE STUDY AREA

The receptor of potential concern for the study Area is based on the development plans for the former Dunne Paints facility. The development plans include the demolition of existing structure to build live/work lofts. Potential human receptors at the site under current land-use activities include adult workers during the construction period. Dunne Paints property for live/work space. Inhalation of chemicals present at the site is potentially a complete exposure

pathway for adult workers. Due to the inability of finding a chemical with properties similar to TPH as mineral spirits, surrogate analysis is infeasible

5.4 Estimation of Exposure Concentrations

An exposure point concentration is the amount of a chemical in the transport media (i.e. soil, air) of a complete exposure pathway at the point of human intake (EPA, 1989b). The evaluation presented in above determined that there potential complete exposure pathways in a development scenario. Each potentially complete exposure pathway has a corresponding exposure point and exposure point concentration.

The exposure points for the on site worker receptor are:

- Areas containing soil of maximum chemical residue concentrations for ingestion and dermal contact
- Ambient air containing airborne particulate matter and chemical vapors

Limited soil sampling of former Dunne Paints property in 1992 after the removal and remediation of soil surrounding the tanks, revealed concentrations of TPH mineral spirits of up to 620 mg/kg at seven feet. This investigation sampled six locations at 4 and 7 feet. Only two locations detected TPH as mineral spirits at 4 feet with concentrations of 4.9 and 3.4 mg/kg, and three locations detected TPH as mineral spirits at 7 feet with concentrations of 1.5, 17 and 620 mg/kg (Hageman-Aguiar, 1992) .

Additional soil sampling was performed in two locations December 15, 1999, and January 13, 2000 at former Dunne Paints property. Both samples were collected from the former varnish production area. One sample was taken at three feet from a location (DV) adjacent to what appeared to be a storm drain next to one of the former varnish kettles. Upon closer inspection during site sampling, it was apparent that this was actually an air vent servicing the adjacent former kettle, which probably served to provide oxygen to fires heating the kettles. Sampling was still conducted in this location to determine whether the vent maintained its integrity given that stains and solvents may have been poured into the vent. Samples were taken from the surface and two feet from location DS, an exposed rectangular patch of soil with approximate dimensions of 2 by 3 feet discovered in another portion of the former Dunne Paints varnish production area.

Soil samples DV-3, DS-0, and DS-2,were analyzed for metals and TPH as mineral Spirits. DV-3 was non-detect for TPH as mineral spirits and contained only background concentrations of metals. Results for sample DS-0 revealed high concentrations of metals and TPH as mineral spirits (15000 mg/kg), as well as detectable concentrations of benzene, napthalene, and xylenes. Contamination in that small patch of soil is confined to the surface, as the samples from a depth of two feet indicated only detectable levels of TPH as mineral spirits (20 mg/kg) and metal

concentrations were significantly reduced. Contaminated surface soil will be removed and properly disposed of prior to demolition (Section)

Due to the unavailability of finding a surrogate chemical with comparable properties to TPH as mineral spirits, it is infeasible use a surrogate approach for estimating an exposure concentration of TPH mineral spirit for inhalation.

6 ECOLOGICAL RISK ASSESSMENT

Ecological Risk posed from chemical residue present at the site was not investigated since there were no complete exposure pathways. The site is completely paved. There are no surface water bodies present near the site that may be impacted from chemicals at the site. It has been shown the groundwater at the site is not migrating. Hence, no aquatic receptors are present in the vicinity of the site. The site does not support small mammals and other terrestrial species. The greatest risk to terrestrial animals would not be from residual site chemicals but from intentional anthropogenic application of chemicals to discourage rodents. For these reasons ecological risk assessment is not warranted.

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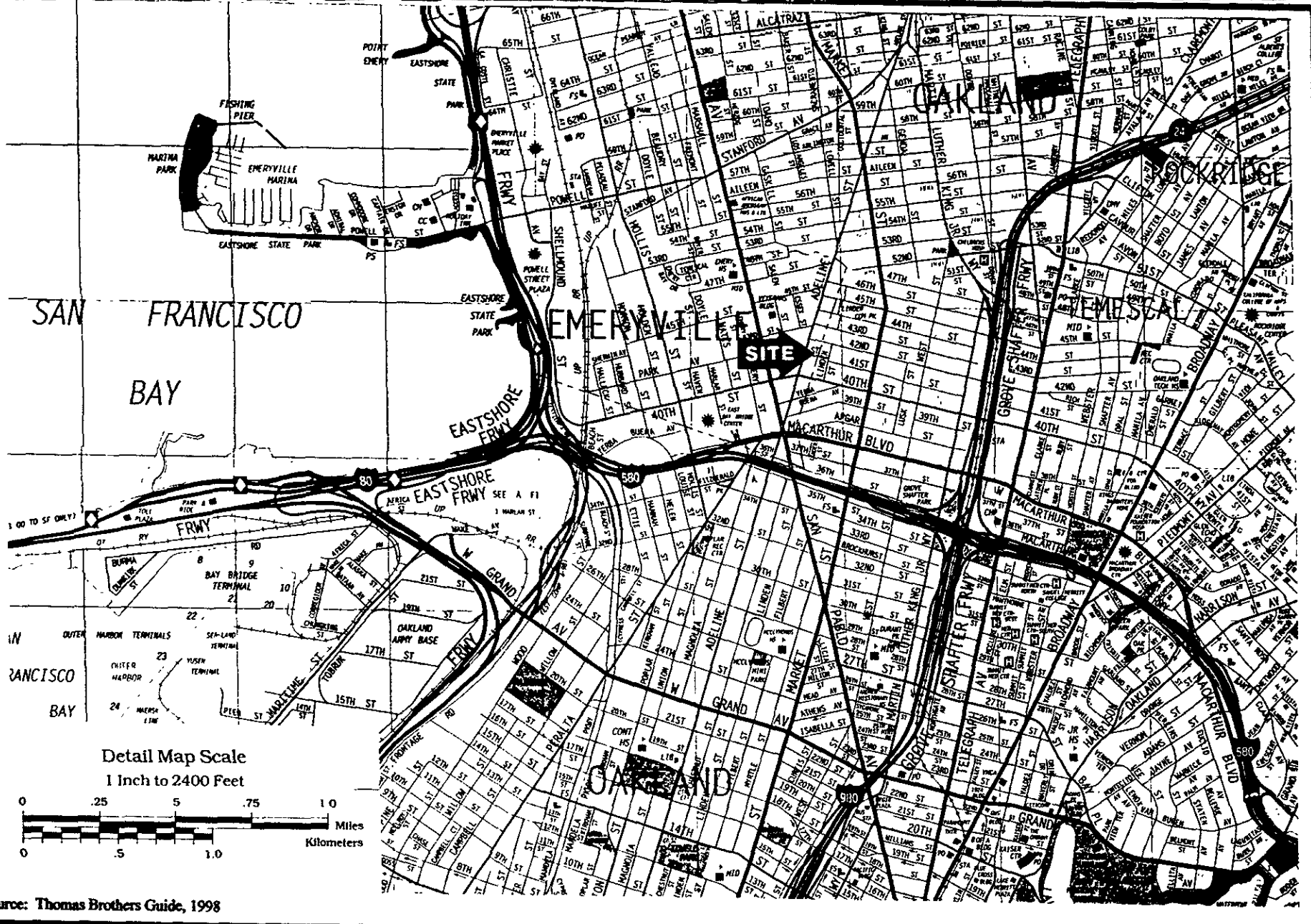

Source: Thomas Brothers Guide, 1998

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2451 Estand Way
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(925) 682-7200 Fax: 686-0399

Figure 1: Site Vicinity

Former Dunne Paints
41st Street at Adeline and Linden
Oakland/Emeryville

December 2000

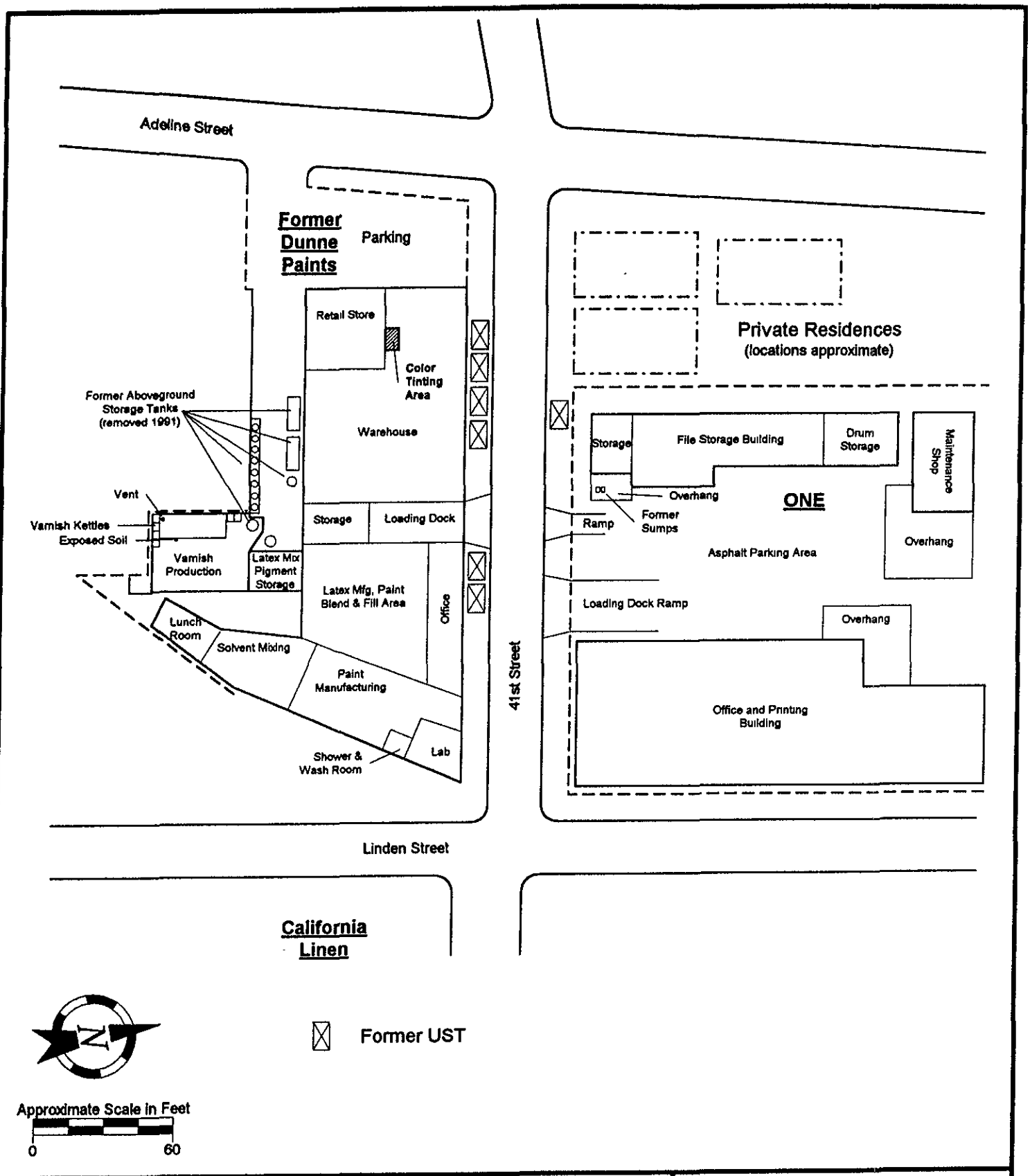

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Figure 2: Site Map With Historic Property Use

Former Dunne Paints
41st Street at Adeline and Linden
Oakland/Emerville, California

December, 2000

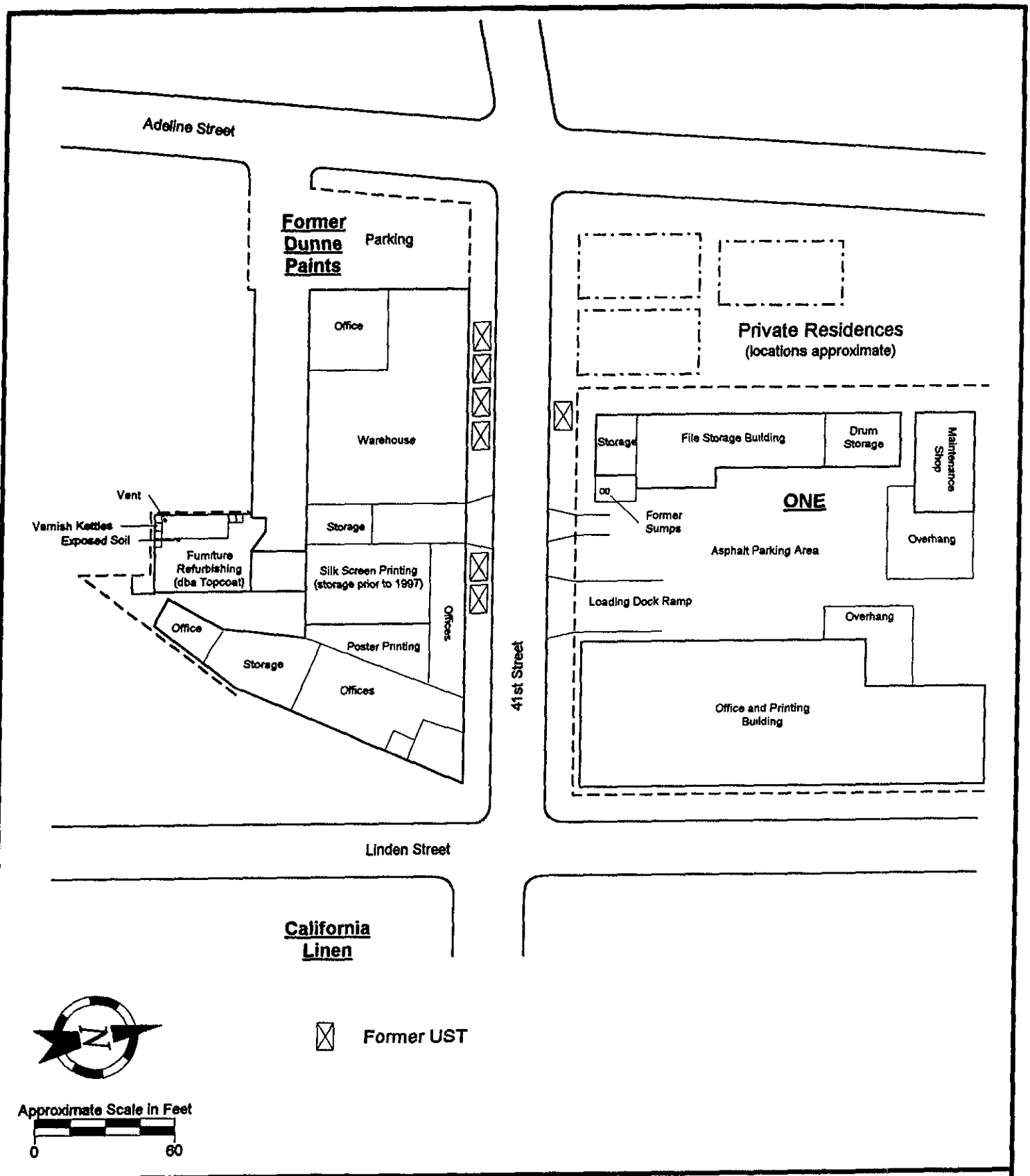

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Figure 3: Site Map With Property Use 1991-1999

Former Dunne Paints
41st Street at Adeline and Linden
Oakland/Emerville, California

December, 2000

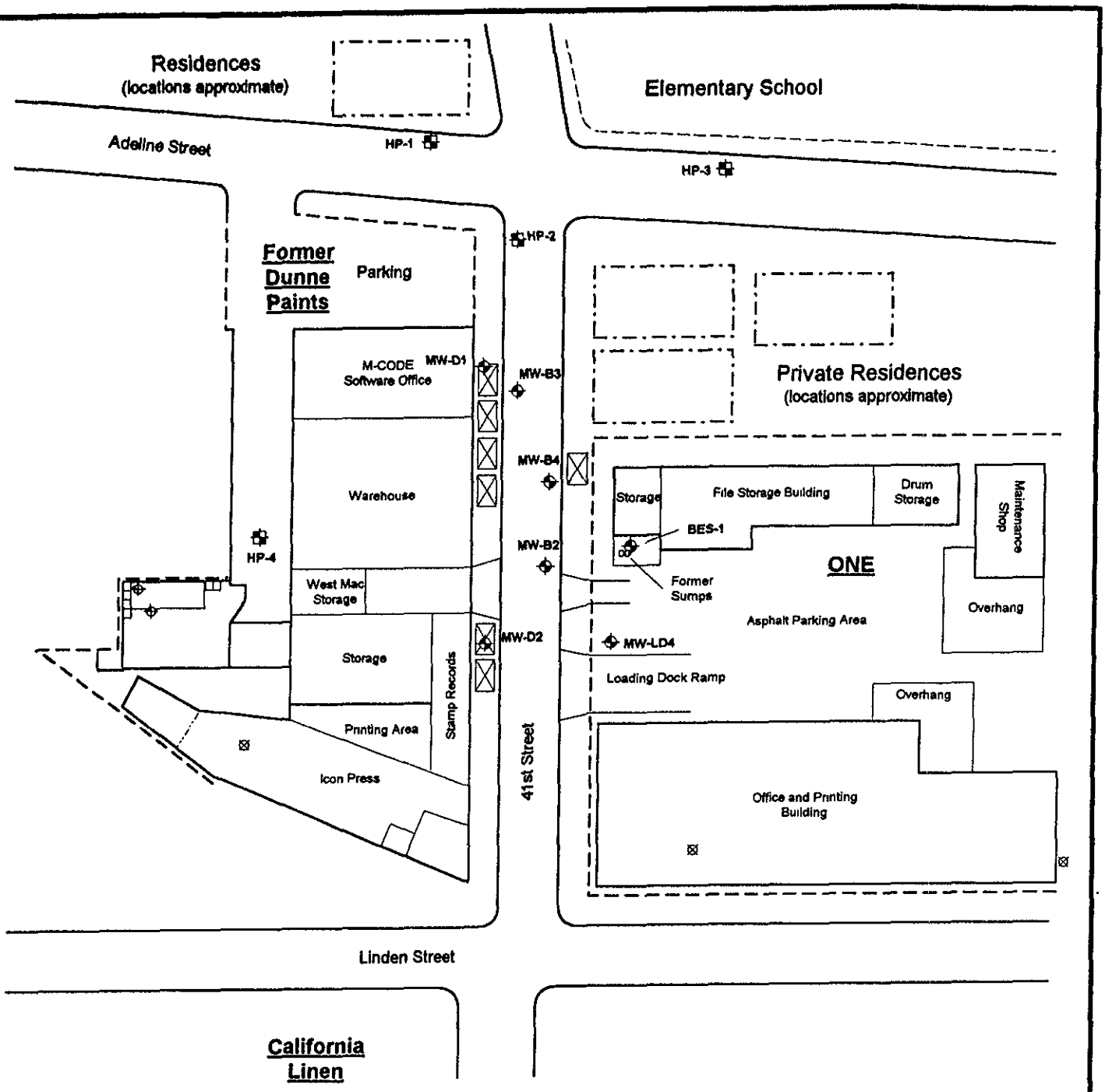

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Figure 4: Site Map With Current Property Use

Former Dunne Paints
41st Street at Adeline and Linden
Oakland/Emerville, California

December, 2000

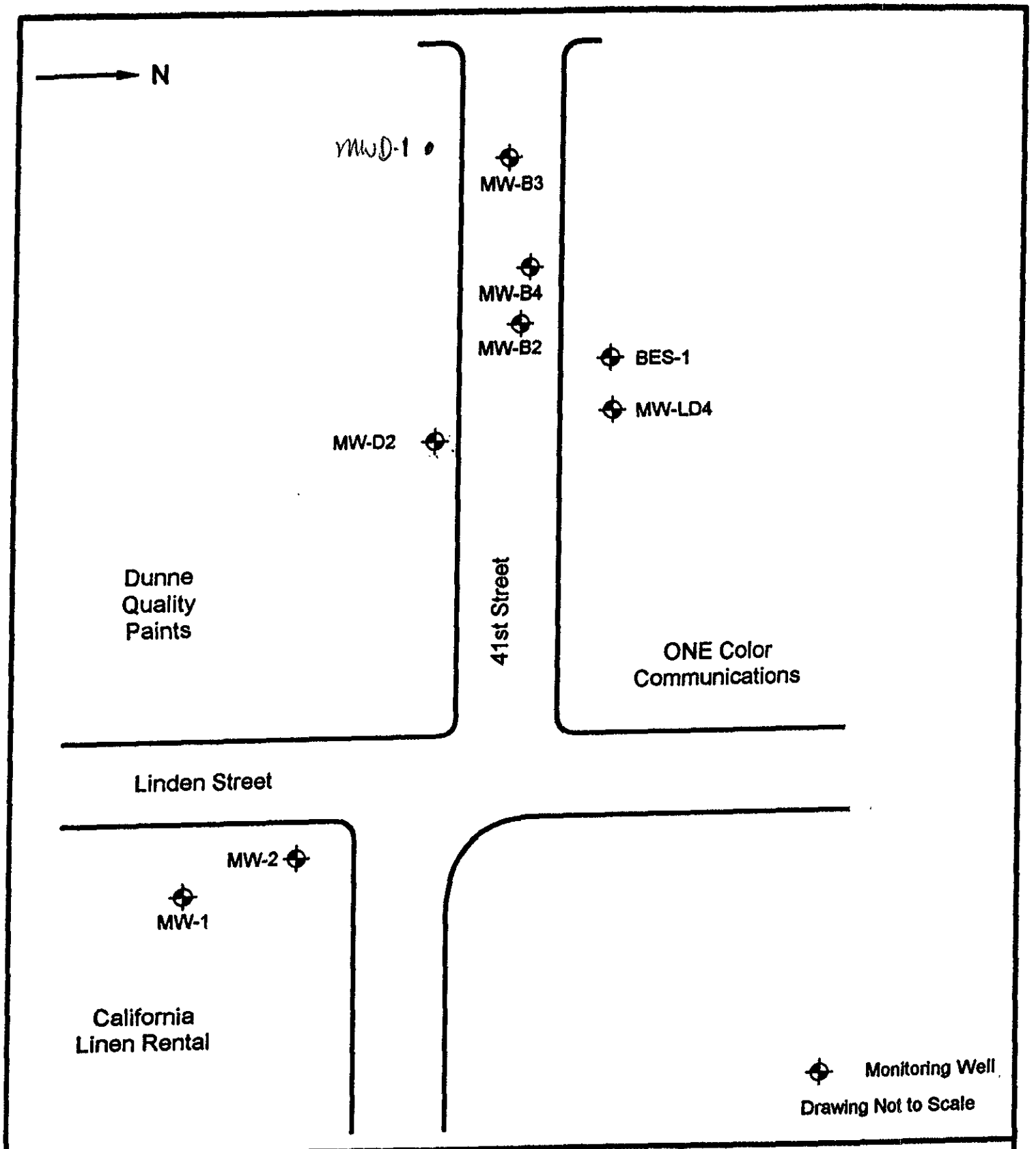

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Figure 5: Monitoring Wells Sampled December 10, 1998

ONE, Dunne Paints, California Linen
41st Street at Adeline and Linden
Oakland/Emeryville, California

Project No. 9813 | January, 1999

TABLE A: Summary of Groundwater Sampling Analyses
ONE, California Linen, and Dunne Quality Paints, Oakland/Emeryville, California
All Concentrations in ug/L

BES

Well No.	Date	TPH-d	TEPH (non-diesel)*	TPH-g	TPPH (non-gasoline)**	Kerosene	Mineral Spirits	Benzene	Ethyl-benzene	Toluene	Total Xylenes	Tetrachloro-ethylene (PCE)	Trichloro-ethylene (TCE)	1,1-Dichloro-ethylene (DCE)	Methylene Chloride
MW-B1	9/30/91	ND < 50	-	18,000	-	29,000	-	5	250	6	980	ND	ND	ND	ND
	6/10/93	-	27,000	-	57,000	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	9/29/93	-	-	-	-	-	43,000	ND	ND	ND	ND	ND	ND	ND	ND
MW-B2	6/10/93	-	3,800	-	1,400	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	9/29/93	-	-	-	-	-	290,000	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	ND < 1,000	-	ND	2,400	ND<1,000	150,000	ND	ND	ND	ND	ND	ND	ND	ND
MW-B3	6/10/93	-	1,700	-	510	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	9/29/93	-	-	-	-	-	2,400	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	ND	-	ND	830	ND	120	ND	ND	ND	ND	ND	ND	ND	ND
MW-B4	6/10/93	-	36,000	-	36,000	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	9/29/93	-	-	-	-	-	1,400	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	1,000	-	ND	2,700	ND	7,500	ND	ND	ND	ND	ND	ND	ND	ND
BES-1	4/21/94	18,000	-	-	-	-	12,000	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	ND < 1,000	-	***	-	ND < 1,000	78,000	ND	ND	ND	ND	ND	ND	ND	ND
MW-LD4	9/30/91	-	-	-	-	-	-	2.0	90	3.1	24	-	-	-	-
	6/10/93	-	21,000	-	1,100	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	9/29/93	-	-	-	-	-	700	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	170	-	ND	83	ND	130	ND	ND	ND	ND	ND	ND	ND	ND
MW-D1	8/26/88	-	-	-	-	-	1,000	-	-	-	-	-	-	-	-
	1/18/89	-	-	-	-	-	ND < 1,000	ND	ND	2.0	1.8	-	-	-	-
	4/24/89	-	-	-	-	-	ND < 1,000	ND	ND	ND	1.1	-	-	-	-
	2/21/90	ND	-	ND	-	ND	ND <100	ND	0.4	ND	1.3	-	-	-	-
	6/10/92	ND	-	ND	-	ND	ND <50	ND	ND	ND	ND	-	-	-	-
	6/10/93	-	220	-	230	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	9/24/93	ND	-	ND	-	-	ND < 50	ND	ND	ND	ND	-	-	-	-
	9/29/93	-	-	-	-	-	110	ND	ND	ND	ND	ND	ND	ND	ND
MW-D2	8/26/88	-	-	-	-	-	1,600	-	-	-	-	-	-	-	-
	1/18/89	-	-	-	-	-	ND < 1,000	ND	ND	6.3	12	-	-	-	-
	4/24/89	-	-	-	-	-	ND < 1,000	ND	ND	ND	7.7	-	-	-	-
	2/21/90	-	-	-	-	-	300	ND	0.3	ND	1.5	-	-	-	-
	6/10/92	ND	-	ND	-	-	76	ND	ND	ND	ND	-	-	-	-
	6/10/93	-	9,100	-	6,200	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	9/24/93	ND	-	ND	-	-	ND < 50	ND	ND	ND	ND	-	-	-	-
	9/29/93	-	-	-	-	-	220	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	ND	-	ND	95	ND	180	ND	ND	ND	ND	ND	ND	ND	ND

TABLE A: Summary of Groundwater Sampling Analyses
ONE, California Linen, and Dunne Quality Paints, Oakland/Emeryville, California
All Concentrations in ug/L

BES

Well No.	Date	TPH-d	TEPH (non-diesel)*	TPH-g	TPPH (non-gasoline)**	Kerosene	Mineral Spirits	Benzene	Ethyl-benzene	Toluene	Total Xylenes	Tetrachloro-ethylene (PCE)	Trichloro-ethylene (TCE)	1,1-Dichloro-ethylene (DCE)	Methylene Chloride
MW-1	10/2/89	610	-	70,000	-	-	-	2,800	2,300	2,400	4,800	-	-	-	-
	2/20/90	2,200	-	73,000	-	-	-	7,500	680	5,900	5,300	-	-	-	-
	7/25/90	ND	-	34,000	-	-	-	2,000	120	670	1,500	-	-	-	-
	10/23/90	1,100	-	50,000	-	-	-	3,300	4,200	4,000	4,700	-	-	-	-
	1/28/91	1,700	-	99,000	-	-	-	4,400	1,800	7,400	8,600	-	-	-	-
	6/5/91	560	-	23,000	-	-	-	2,000	640	1,200	2,500	-	-	-	-
	8/15/91	3,500	-	59,000	-	-	-	3,800	1,100	5,500	4,800	-	-	-	-
	11/21/91	9,800	-	47,000	-	-	-	6,000	2,200	7,200	1,000	-	-	-	-
	3/18/92	14,000	-	77,000	-	-	-	17,000	2,300	18,000	1,300	-	-	-	-
	10/17/92	ND	-	83,000	-	-	-	11,000	13,000	18,000	2,800	-	-	-	-
	6/10/93	-	11,000	38,000	-	-	-	6,700	1,600	3,700	6,500	ND	ND	ND	ND
	9/29/93	-	-	-	-	-	59,000	7,100	1,800	5,700	7,900	ND	ND	ND	ND
	12/10/98	ND	-	***	-	ND	4,700	5,300	1,600	1,700	3,500	ND	ND	ND	ND
MW-2	10/2/89	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	2/20/90	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	7/25/90	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	10/23/90	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	1/28/91	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	6/5/91	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	8/15/91	50	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	11/21/91	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	3/18/92	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	10/17/92	ND	-	ND	-	-	-	ND	ND	1.1	3 3	-	-	-	-
	6/10/93	ND	-	ND	-	-	-	ND	ND	ND	ND	-	-	-	-
	9/29/93	-	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	ND	-	***	-	ND	ND < 50 250	ND 75	ND 47	ND 33	ND 100	ND ND	ND ND	ND ND	ND ND

- Not Tested
ND - Non Detectable

* TPH chromatogram pattern indicated a mix of TPH carbon chains not typical of the diesel range
** TPH chromatogram pattern indicated a mix of TPH carbon chains not typical of the gasoline range
*** Insufficient quantity of sample for analysis
**** Discrepancy in elevation surveys

TABLE B: Summary of Comprehensive Site Depth to Groundwater Measurements
ONE, California Linen, Dunne Paints, Oakland/Emeryville, California

All measurements in feet.

BES

Well No.	Date	Depth of Well (bgs)	TOC Elevation (msl)	Depth to Water (bgs)	Ground-water Elevation (msl)
MW-B1	6/10/93	19.88	49.92	6.14	43.78
MW-B2	6/10/93	23.35	50.77	6.75	44.02
MW-B3	6/10/93	20.88	49.02	6.85	42.17
MW-B4	6/10/93	21.50	49.74	6.00	43.74
MW-LD4	6/10/93	10.60	51.51	6.98	44.53
MW-D1	6/10/93	12.50	50.56	5.29	45.27
MW-D2	6/10/93	12.55	50.56	6.25	44.31
MW-1	6/10/93	22.00	53.89	7.41	46.48
MW-2	6/10/93	22.60	54.06	9.24	44.82
MW-B1	7/8/93	19.88	49.92	6.64	43.28
MW-B2	7/8/93	23.35	50.77	6.91	43.86
MW-B3	7/8/93	20.88	49.02	6.05	42.97
MW-B4	7/8/93	21.50	49.74	6.14	43.60
MW-LD4	7/8/93	10.60	51.51	7.18	44.33
MW-D1	7/8/93	12.50	50.56	5.67	44.89
MW-D2	7/8/93	12.55	50.56	6.37	44.19
MW-1	7/8/93	22.00	53.89	7.70	46.19
MW-2	7/8/93	22.60	54.06	9.04	45.02
MW-B1	8/24/93	19.88	49.92	6.69	43.23
MW-B2	8/24/93	23.35	50.77	7.22	43.55
MW-B3	8/24/93	20.88	49.02	6.21	42.81
MW-B4	8/24/93	21.50	49.74	6.34	43.40
MW-LD4	8/24/93	10.60	51.51	7.31	44.20
MW-D1	8/24/93	12.50	50.56	6.01	44.55
MW-D2	8/24/93	12.55	50.56	6.47	44.09
MW-1	8/24/93	22.00	53.89	7.70	46.19
MW-2	8/24/93	22.60	54.06	9.24	44.82
MW-B1	9/29/93	19.88	49.92	8.46	41.46
MW-B2	9/29/93	23.35	50.77	8.80	41.97
MW-B3	9/29/93	20.88	49.02	7.74	41.28
MW-B4	9/29/93	21.50	49.74	7.97	41.77
MW-LD4	9/29/93	10.60	51.51	7.43	44.08
MW-D1	9/29/93	12.50	50.56	7.69	42.87
MW-D2	9/29/93	12.55	50.56	7.96	42.60
MW-1	9/29/93	22.00	53.89	7.84	46.05
MW-2	9/29/93	22.60	54.06	9.39	44.67
MW-B1	10/20/93	19.88	49.92	6.69	43.23
MW-B2	10/20/93	23.35	50.77	7.25	43.52
MW-B3	10/20/93	20.88	49.02	6.24	42.78
MW-B4	10/20/93	21.50	49.74	6.11	43.63
MW-LD4	10/20/93	10.60	51.51	7.37	44.14
MW-D1	10/20/93	12.50	50.56	6.20	44.36
MW-D2	10/20/93	12.55	50.56	6.48	44.08
MW-1	10/20/93	22.00	53.89	7.98	45.91
MW-2	10/20/93	22.60	54.06	9.18	44.88
MW-B1	11/23/93	19.88	49.92	6.65	43.27
MW-B2	11/23/93	23.35	50.77	7.26	43.51
MW-B3	11/23/93	20.88	49.02	6.18	42.84
MW-B4	11/23/93	21.50	49.74	6.38	43.36
MW-LD4	11/23/93	10.60	51.51	7.32	44.19
MW-D1	11/23/93	12.50	50.56	6.08	44.48
MW-D2	11/23/93	12.55	50.56	6.44	44.12
MW-1	11/23/93	22.00	53.89	7.92	45.97
MW-2	11/23/93	22.60	54.06	9.21	44.85
MW-B2	12/10/98	23.35	50.77	6.43	44.34
MW-B3	12/10/98	20.88	49.02	4.94	44.08
MW-B4	12/10/98	21.50	49.74	6.20	43.54
MW-LD4	12/10/98	10.60	51.51	6.14	45.37
BES-1	12/10/98	30.00	-	10.18	-
MW-D2	12/10/98	12.55	50.56	5.68	44.88
MW-1	12/10/98	22.00	53.89	7.08	46.81
MW-2	12/10/98	22.60	54.06	9.54	44.52

TABLE A1: Summary of Groundwater Sampling Analyses
ONE, California Linen, and Dunne Quality Paints, Oakland/Emeryville, California
All Concentrations in ug/L

Well No.	Date	TPH-d	TEPH (non-diesel)*	TPH-g	TPPH (non-gasoline)**	Kerosene	Mineral Spirits	Benzene	Ethyl-benzene	Toluene	Total Xylenes	MTBE	Tetrachloro-ethylene (PCE)	Trichloro-ethylene (TCE)	1,1-Dichloro-ethylene (DCE)	Methylene Chloride
MW-B1	9/30/1991	ND < 50	-	18,000	-	29,000	-	5	250	6	980	-	ND	ND	ND	ND
	6/10/1993	-	27,000	-	57,000	-	-	ND	ND	ND	ND	-	ND	ND	ND	ND
	9/29/1993	-	-	-	-	-	43,000	ND	ND	ND	ND	-	ND	ND	ND	ND
MW-B2	6/10/1993	-	3,800	-	1,400	-	-	ND	ND	ND	ND	-	ND	ND	ND	ND
	9/29/1993	-	-	-	-	-	290,000	ND	ND	ND	ND	-	ND	ND	ND	ND
	12/10/1998	ND < 1,000	-	ND	2,400	ND<1,000	150,000	ND	ND	ND	ND	ND<250	ND	ND	ND	ND
	12/14/1999	-	-	-	-	-	630	-	-	-	-	-	-	-	-	-
MW-B3	6/10/1993	-	1,700	-	510	-	-	ND	ND	ND	ND	-	ND	ND	ND	ND
	9/29/1993	-	-	-	-	-	2,400	ND	ND	ND	ND	-	ND	ND	ND	ND
	12/10/1998	ND	-	ND	830	ND	120	ND	ND	ND	ND	ND<5.0	ND	ND	ND	ND
	12/14/1999	-	-	-	-	-	ND < 50	-	-	-	-	-	-	-	-	-
MW-B4	6/10/1993	-	36,000	-	36,000	-	-	ND	ND	ND	ND	-	ND	ND	ND	ND
	9/29/1993	-	-	-	-	-	1,400	ND	ND	ND	ND	-	ND	ND	ND	ND
	12/10/1998	1,000	-	ND	2,700	ND	7,500	ND	ND	ND	ND	ND<50	ND	ND	ND	ND
	12/14/1999	-	-	-	-	-	5,100	-	-	-	-	-	-	-	-	-
BES-1	4/21/1994	18,000	-	-	-	-	12,000	ND	ND	ND	ND	-	ND	ND	ND	ND
	12/10/1998	ND < 1,000	-	***	-	ND < 1,000	78,000	ND	ND	ND	ND	ND<250	ND	ND	ND	ND
	12/14/1999	-	-	-	-	-	72,000	-	-	-	-	-	-	-	-	-
MW-LD4	9/30/1991	-	-	-	-	-	-	20	90	31	24	-	-	-	-	-
	6/10/1993	-	21,000	-	1,100	-	-	ND	ND	ND	ND	-	ND	ND	ND	ND
	9/29/1993	-	-	-	-	-	700	ND	ND	ND	ND	-	ND	ND	ND	ND
	12/10/1998	170	-	ND	83	ND	130	ND	ND	ND	ND	ND<5.0	ND	ND	ND	ND
	12/14/1999	-	-	-	-	-	440,000	-	-	-	-	-	-	-	-	-
	1/13/2000(g)	-	-	-	-	-	630,000	-	-	-	-	-	-	-	-	-
MW-D1	8/26/1988	-	-	-	-	-	1,000	-	-	-	-	-	-	-	-	-
	1/18/1989	-	-	-	-	-	ND < 1,000	ND	ND	2.0	1.8	-	-	-	-	-
	4/24/1989	-	-	-	-	-	ND < 1,000	ND	ND	ND	1.1	-	-	-	-	-
	2/21/1990	ND	-	ND	-	ND	ND <100	ND	0.4	ND	1.3	-	-	-	-	-
	6/10/1992	ND	-	ND	-	ND	ND <50	ND	ND	ND	ND	-	-	-	-	-
	6/10/1993	-	220	-	230	-	-	ND	ND	ND	ND	-	ND	ND	ND	ND
	9/24/1993	ND	-	ND	-	-	ND < 50	ND	ND	ND	ND	-	-	-	-	-
	9/29/1993	-	-	-	-	-	110	ND	ND	ND	ND	-	ND	ND	ND	ND
	12/14/1999	-	-	-	-	-	ND < 50	-	-	-	-	-	-	-	-	-
MW-D2	8/26/1988	-	-	-	-	-	1,600	-	-	-	-	-	-	-	-	-
	1/18/1989	-	-	-	-	-	ND < 1,000	ND	ND	6.3	12	-	-	-	-	-
	4/24/1989	-	-	-	-	-	ND < 1,000	ND	ND	ND	7.7	-	-	-	-	-
	2/21/1990	-	-	-	-	-	300	ND	0.3	ND	1.5	-	-	-	-	-
	6/10/1992	ND	-	ND	-	-	76	ND	ND	ND	ND	-	-	-	-	-
	6/10/1993	-	9,100	-	6,200	-	-	ND	ND	ND	ND	-	ND	ND	ND	ND
	9/24/1993	ND	-	ND	-	-	ND < 50	ND	ND	ND	ND	-	-	-	-	-
	9/29/1993	-	-	-	-	-	220	ND	ND	ND	ND	-	ND	ND	ND	ND
	12/10/1998	ND	-	ND	95	ND	180	ND	ND	ND	ND	ND<5.0	ND	ND	ND	ND
	12/14/1999	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-
HP-1	12/14/1999(g)	-	-	-	-	-	21,000	-	-	-	-	-	-	-	-	-
HP-1	1/13/2000(g)	-	-	-	-	-	ND < 50	-	-	-	-	-	-	-	-	-
HP-2	1/13/2000(g)	-	-	-	-	-	67	-	-	-	-	-	-	-	-	-
HP-3	12/15/1999(g)	-	-	-	-	-	ND < 56	-	-	-	-	-	-	-	-	-
HP-4	1/13/2000(g)	-	-	-	-	-	570	-	-	-	-	-	-	-	-	-

"-" Not Tested
ND - Non Detectable

* TPH chromatogram pattern indicated a mix of TPH carbon chains not typical of the diesel range
** TPH chromatogram pattern indicated a mix of TPH carbon chains not typical of the gasoline range
*** Insufficient quantity of sample for analysis
**** Discrepancy in elevation surveys
g Grab Sample

HEALTH AND SAFETY PLAN

1 PERSONNEL RESPONSIBILITIES

1.1 SITE HEALTH AND SAFETY COORDINATOR (SHSC)

Reports jointly to the Health and Safety Manger (HSM) and the Project Manager (PM) for all aspects of the project and is the primary contact for health and safety during all field activities. Establishes work zones, evacuation routes, and assembly areas. Makes the day-to-day decision to modify levels of protection provides in the HSP based on site conditions or monitoring data. Serves jointly with the FM as Emergency Coordinator (EC). Has the authority to stop all work if conditions are judged to be hazardous to onsite personnel or the public, and reports and investigates accidents and near-misses.

The SHSC or designee must carefully document the implementation of this HSP by maintaining the Project Health and Safety Files.

1.2 PROJECT HEALTH AND SAFETY MANAGER (PHSM)

Responsible for approval of the HSP and Coordinating the implementation of health and safety procedures. Responsible for approval of all changes made to this HSP, supervision of the SHSC, and the conduct of site audits.

1.3 PROJECT MANGER (PM) AND FIELD MANAGER (FM)

Has responsibility for implementing project health and safety for field activities, through correcting unsafe acts or conditions, enforcing procedures, and conducting daily tailgate meetings. Serves as primary EC in emergency situations. Also responsible for assuring the submittal of the Supervisor's Report of Accident and First Aid Incident Report (Appendix 1) to the HSM within 24 hours of an incident.

1.4 TECHNICAL STAFF

All Block environmental Services and subcontracting personnel are responsible for compliance with this HSP in its entirety. They are responsible for taking all reasonable precautions to prevent injury to themselves and to their fellow employees and for being alert to potentially harmful situations. Technical staff are expected to perform only those tasks which they believe can be done safely and immediately report any accidents near misses and/or unsafe conditions to the SHSC or the PM.

1.5 SUBCONTRACTORS

Responsible for the conduct of personnel while onsite and ensuring their compliance with this HSP. Notifying the SHSC of any special medical conditions (i.e. allergies, diabetes, etc.). Correcting any unsafe acts or conditions that are identified by the PM or the SHSC.

2 PERSONNEL PROTECTION

The prescribed methods and procedures used to protect personnel (site workers and adjacent community) from over exposure to hazardous materials and hazardous conditions posed by site operations are grouped into three primary categories: Administrative Controls, Engineering Controls, and Personal Protective Equipment (PPE).

2.1 ADMINISTRATIVE CONTROLS

2.1.1 Medical Surveillance

2.1.1.1 Periodic Comprehensive Exam:

All personnel requiring access to controlled work areas will not have to complete a pre-assignment medical examination. However, a periodic (usually annual) examination prior to assignment, in accordance with OSHA 29 CFR 1910.120(f) will have been completed. The exam must be performed by an Occupational Health Physician, who will provide a written clearance for hazardous waste site work and for respirator usage for those workers required to use such protection.

2.1.1.2 Emergency Medical Treatment

Personnel who exhibit signs and symptoms of chemical or heat overexposure, or have been injured on the job, might also seek medical services. See also Emergency Response section for specific information regarding emergency services and required report submittals. Subcontractors should provide internal Worker's Compensation information to the SHSC or HSM during the pre-work meeting.

2.1.1.3 Special:

Field personnel should have current (within 10 years) Tetanus shots.

2.1.2 Training

2.1.2.1 Comprehensive:

All routine onsite workers performing intrusive activities will have completed the OSHA 40-hour Hazardous Waste Operations Training, 24-hour onsite supervised training and appropriate annual updates. Supervisors will have completed an additional 8 hours of OSHA Supervisory

Training. QA/QC personnel that package and/or handle hazardous materials for shipment must have completed the DOT HM 126F training as required by USEPA 49CFR 172.

Occasional site workers that will not receive exposures exceeding permissible exposure limit require only 24 hours of OSHA Hazardous Waste Operations Training and one day of onsite supervised training.

2.1.2.2 Specialized:

Prior to the initiation of site activities for each phase, the SHSC and PM will conduct a Health and Safety "kick-off" orientation. At this time, pertinent SOPs and site-specific Health and Safety Plan (HSP) will be discussed in detail with special attention being given to site chemical and physical hazards, PPE, emergency procedures, etc. Upon completion of this briefing, all routine field personnel, including subcontractors, will be required to read and sign the acceptance sheet of this HSP. Site visitors and non-routine subcontractors that do not attend the meeting will be required to undergo a specialized health and safety orientation.

2.1.2.3 Daily

"Tailgate" safety meetings will be conducted each morning by the FM for all phases of the work. Topics of discussion will include: work tasks and designated PPE, emergency procedures, evacuation routes, instruction in use of safety equipment (as required), prior safety problems, recognition of signs and symptoms of overexposure, importance of proper decontamination and personal hygiene, etc. These meetings must be documented: forms will be provided.

2.2 ACCIDENT PREVENTION

Accident prevention is an active part of a field project's work schedule. The following measures will be taken and considered standard practice.

- SHSC review of site conditions
- Use of buddy system
- Placement of readily available safety equipment and first-aid supplies
- Air monitoring as needed
- Sign posting as appropriate

In addition, a daily safety meeting will be conducted and documented at the beginning of each shift or whenever new employees arrive at the site once the project commences. Health and safety considerations for the day's activities will be discussed, and the required protective equipment necessary will be outlined.

Prevent physical hazards associated with earth moving equipment by pre-use certification and daily inspections, and slip trip fall hazards conditions. Unauthorized/untrained personnel are not allowed onsite, particularly in the Exclusion Zone.

2.2.1 Safe Work Practices

1. Unauthorized personnel are not allowed onsite, particularly in the Exclusion Zone.
2. Work groups will always consist of at least two (2) team members.
3. Wind-flags will be positioned onsite so that work can be performed upwind as much as possible.
4. A high standard of personnel hygiene will be observed. Smoking, eating, drinking, chewing gum or tobacco, taking medication, and applying cosmetics will not be permitted within any restricted or exclusion zone.
5. Wearing of contact lens is prohibited.
6. Use of open flames or spark-producing equipment is not allowed anywhere onsite without a hot-work permit.
7. Personnel under the obvious influence of alcohol or controlled substances are not allowed onsite; those taking medications must notify the SHSC.
8. Personnel will avoid skin contact with contaminated or potentially-contaminated media. If such contact occurs, the affected areas should be washed thoroughly with soap and water.
9. Personnel will discard and replace any damaged or heavily soiled protective clothing.
10. Personnel should notify the SHSC of any defective monitoring, emergency, or other protective/safety equipment.
11. Prior to using any machinery or mechanized equipment onsite, owners/operators shall inspect, test, and certify all equipment to be in safe operating condition. Any deficiencies affecting health and safety shall be corrected prior to equipment use.
12. All unsafe conditions shall be made safe immediately. All unsafe conditions not in the scope of the project shall be reported to the PM and the condition corrected.
13. All site personnel will familiarize themselves with these and the emergency procedures during daily tailgate, pre-work safety meetings.
14. If temperature exceeds 75°F, the following work rest regimes are to occur:

15. Temperature	Work	Rest*
75-80	90 min	15 min
80-85	60 min	15 min
85-90	45 min	15 min
90-95	30 min	15 min

* Rest in a shaded area

2.2.2 Logs, Reports, and Record Keeping

2.2.2.1 Submittal of Certification

Proof of health and safety training and medical certifications must be submitted to the PM and the SHSC by the subcontractor prior to the mobilization of field crew. Supporting documentation and certifications will remain on file with the HSM or PM and the Purchasing Department (subcontractors only). Field projects will not be allowed to take place in the absence of adequate documentation.

2.2.2.2 Site Monitoring, Reports, and Records

The health and safety files maintained by the SSC, or his/her designee, will be the primary form of record keeping and documentation of site health and safety activities. These documents will be completed in sufficient detail to document the work performed; any unusual or significant circumstances under which the work was performed; any unanticipated/unplanned action taken to mitigate or to otherwise cope with unexpected field conditions; and pertinent comments about site-specific conditions that could have a bearing on the work performed. Documentation is required for all phases of work. See also SHCH duties listed under Personnel Responsibilities. Record keeping practices will follow 29CFR1910.20

The Field Binder will contain the following documents; all blank forms are provided.

- Signed acceptance sheet of this HSP (all routine onsite personnel)
- Safety inspection records including violations and remedial action plans
- Health and Safety notations made in the Site Log Book that is held by the FM
- Daily Visitor/Employee Rooster
- Signed Daily Tailgate Safety Meeting Reports
- Equipment Certification and Daily Inspection Records
- Air Surveillance Records
- Workplace Monitoring Exposure Records
- Supervisor's First Report of Injury and First Aid Incident Reports
- Incident Reports Report (for environmental incidents, equipment damage, and work stoppages)
- Completed Record of Changes to the HSP

2.2.3 Engineering Controls

2.2.3.1 Barriers

Traffic cones, and or caution tape will be erected at a safe distance from hazardous areas and moving equipment in order to prevent unauthorized access to work areas from vehicular and pedestrian traffic. Barriers will be appropriate for the level of work activities and anticipated traffic. Signs will be conspicuously posted as:
"CAUTION"- "Authorized Personnel Only" or equivalent

2.2.3.2 Dust Suppression

Dust suppression techniques will be employed to minimize the generation of dust/particulates and associated contaminants into the atmosphere, to the greatest extent possible. Also, stationary sources of dust, e.g., stockpile should be covered with plastic (visqueen) or canvas tarping. Monitoring of the work areas and the fence lines shall be conducted on a regular basis with the portable dust monitor to ensure engineering controls are effectively reducing concentrations below action levels. If air monitoring indicates the action levels have been exceed, then the onsite water truck will provide water spay or curtain to contain dust.

2.2.3.3 Rinsate Collection /Containment

A system for collection of rinsate from decontamination operations (heavy equipment, sampling equipment and personal decon) may be required. The system will be as complex or simple as necessary to collect and contain spent decon fluids, equipment overspray from steam cleaning operations. Construction of the "permanent" heavy equipment decon area and all areas where steam cleaning of sampling equipment will be the responsibility of the equipment contractor. Construction of the temporary stations for personnel and other sampling equipment will be the responsibility of the SHSC and FM. Decon buckets should be placed in larger, plastic bins to contain splash. All spent fluids will be placed in 55 gallon drums (DOT approved) and stored onsite in the drum storage area until transportation offsite by the City of Modesto.

2.2.3.4 Noise Reduction

It is anticipated that situations may arise when noise levels exceed 85 decibels (dBA) in an eight hour time weighted average (TWA). An example of this possibility is working close (within 20-25 feet of operating equipment (back hoe) or when speech becomes difficult to understand at 5 feet) to the subcontractor during direct push or drilling activities onsite. If excessive noise levels occur, efforts will be made to control this by issuance of ear plugs to all personnel and by implementation of a system of hand signals understood by all.

2.2.3.5 Storm Water Pollution Controls

Should rainfall occur during construction, storm water pollution controls will be implemented to minimize storm water runoff from exposed COC-containing soil at the Site and to prevent sediment from leaving the Site.

Storm water pollution controls will be based on best management practices ("BMPs"), such as those described in the *California Storm Water Best Management Practice Handbooks Construction Activity* (Storm Water Quality Task Force, March 1993). On-Site sediment and

erosion protection controls will be the primary methods for minimizing discharges of sediments from the Site. Sediment and erosion protection controls may include, but are not limited to, the following:

- constructing berms or erecting silt fences at entrances to the Site,
- placing straw bale barriers around catch basins and other entrances to the storm drain, and
- during significant rainfall events, covering with plastic sheeting or tarps any soil stockpiles generated as a result of excavating soil potentially impacted by COCs.

2.2.4 Personal Protective Equipment (PPE)

Initial levels of protection for this site have been specified as Levels D, Modified D and potentially C. All personnel entering controlled work zones will initially be required to wear the Level of Protection as specified in Table 1. Protection may be upgraded or downgraded depending on monitoring data (compared with action levels) and site conditions, as determined by the SHSC. All changes must be noted in the HSP and documented on Record of Changes. The following outlines the minimum requirements for each level of protection assigned or potentially assigned.

Level D Personal Protection Equipment

- Work shirt and full length cotton pants or overalls
- ANSI standard steel toed work boots
- ANSI standard hard hat
- ANSI safety glasses
- USEPA haring protectors (when working in high noise areas)
- Dust masks if needed

Modified Level D Personal Protection Equipment

- Level D equipment
- Tyvek[tm] suits (upgrade to PE or Saranrex-coated Tyvek as needed)
- Outer Chemical-resistant gloves and inner nitrile gloves
- Boot covers

Level C Personal Protective Equipment

- Level Modified D equipment

NIOSH approved half-face or full face air purifying respirator

Table1
INITIAL ASSIGNMENTS OF PROTECTION LEVELS, TRAINING AND MEDICAL SURVEILLANCE FOR SITE WORK TASKS

Task Name	Level of Protection	40-hr	HAZWOPPER	Med. Surv.
1.5 feet of excavation	Mod. D		X	yes
Demolition	Level D		X	yes
Excavation	Mod D		X	yes

Donning / Doffing Procedure

The following procedures are given as a guide; failure to adhere to these procedures may result in the PPE being ineffective against contaminants. These may be altered by the SHSC if improvements can be made to the procedure and these changes are warranted in the field. Also, some articles of PPE may not be necessary for all site tasks.

PPE Donning Procedure: for Mod. Level D and greater

- Inspect all protective gear before donning
- Don Tyvek suit, inner gloves, secure with tape (leave pull tab). If Tyvek is loose, secure with tape to avoid capture in moving or rotating equipment.
- Don respirator. If not in level C, maintain respirator in a sealed plastic bag onsite in case of an upgrade.

PPE Doffing Procedure:

- Wash/rinse (if necessary) excess mud or other debris from outer boots, gloves, and clothing.
- Remove tape using pull tab and remove outer clothing in the following order: boots, outer gloves, and Tyvek suits. Place disposable and reusable PPE in designated (separate) containers for donning during reentry.
- Remove respirator (if applicable)
- Remove inner gloves
- Enter clean zone

2.3 MONITORING WELL ABANDONMENT

Prior to or during construction, existing monitoring wills will be properly destroyed in accordance with the Alameda County Public Works Agency (ACPWA") procedures in order to prevent accidental contamination of groundwater. Appropriate permits will be obtained from the ACPWA. ACPWA refers to the California Department of Water Resources procedures for well

abandonment (CDWR, 1981; 1991).

2.4 HAZARD EVALUATION

Chemical and physical and operating safety hazards anticipated during this project will be evaluated in subsequent tables and sections. The tables provide the details that support the task specific hazard analyses. A general overview of the contaminants of concern is presented below in Section 3.1. Table 2 provides site characterization data. Table 3 summarizes the chemical properties important for exposure assessment and for the identification of immediately dangerous to life and health (IDHL) conditions. Table 4. Summarizes the physical and operating safety hazards and control measures identified for this project. A complete hazard analysis of each site work task, including relative risk ranking, and the list of protective measures completes this section of Hazard Evaluation. Further details of specific control measures for these hazards were presented in Personnel Protection, Section 4.3.

2.4.1 Chemical Exposure

The primary entry routes of potential contaminant and hazardous materials onsite include inhalation of vapors and dust; skin contact with contaminated materials; and ingestion of airborne contaminated dust, or materials from hand-to-mouth contact due to inadequate personal hygiene. To minimize these exposure pathways, dust suppression techniques will be employed by the onsite subcontractor and if needed the HSC will periodically monitor for airborne contaminants in the work and perimeter areas. In addition, all required PPE will be worn and personal hygiene will be carefully monitored.

The following categories of compounds may be present at the site and have been detected during previous investigations. These include the surface sample taken from the exposed patch of soil. Maximum concentrations (mg/kg) of chemicals detected in the soil up to a seven foot depth at the site are shown in parenthesis. The majority of maximum concentrations were found in the sample taken from the exposed patch of soil in the former varnish production area (BES, 2000).

- TPH as mineral spirits (15000)
- Antimony (6.5)
- Arsenic (7.4)
- Barium (510)
- Cadmium (24)
- Total Chromium (93)
- Cobalt (88)
- Copper (100)
- Lead (1900)
- Molybdenum (3.1)
- Nickel (49)
- Vanadium (31)
- Zinc (4100)

- Mercury (2700)
- Acetone (0.055)
- Benzene (2.3)
- Napthalene (3.1, 32)*
- Xylenes (4.6)

* First quantity is from Method 8260 for VOCs, second is from Method 8270 for SVOCs

Table 2 summarizes the information collected during the site characterization, including their origin, hazardous properties, and likely current physical state of contaminants in the environment. Table 3 summarizes the chemical properties important for exposure assessment and for identification of IDHL conditions.

In addition to the chemicals of concern, Diesel and Calibration gases are anticipated to be brought on site to supplement excavation activities.

TABLE 2
SITE CHARCTERIZATION

ANTICIPATED PHYSICAL STATE OF CONTAMINANTS:

Solid

MATRIX

Soils at depth

POTENTIAL HAZARDOUS PROPERTIES

Toxic
Flammable
Volatile
Carcinogenic

CONTAINER STORAGE SYSTEM INFORMATION

Not Applicable

CONDITION OF CONTAINER STORAGE SYSTEM

Not Applicable

ORIGIN OF INDUSTRIAL APPLICATION OF CHEMICALS OF CONCERN

Previous use

Note: Facility was former paint manufacturer Former storage tanks at site contained TPH as mineral spirits.

Table 3
CHEMICAL HAZARD PROPERTIES AND EXPOSURE INFORMATION

Chemical name/Synonym	ACGIH TLV/ OSHA PEL (ppm)	STEL/ IDHL	IP (ev)	UEL/ LEL	Route	Symptoms	Properties
TPH as mineral spirits	NA	NA	NA	NA	Ing Inh Con	Skin and eye irritation, gastro distress	oil-like substance kerosene odor

2.5 SITE CONTROL

The following section describes the protocol that must be followed to ensure safe conditions for workers, personnel, and local residents.

2.5.1 Visitor Access

All site visitors (except OSHA inspectors) must receive prior approval from the FM,, PM or the Client, and may do so only for the purposes of observing site conditions or operations. Visitors will not be allowed into controlled work zones.

2.5.2 Work Zones

2.5.2.1 Support/Clean Zone (SZ/CZ)

The SZ/CZ will be upwind and away from the contaminated area. Vehicles, emergency equipment, the telephone and break area, and any non-essential personnel will be maintained in this area.

2.5.2.2 Contamination Reduction Zone (CRZ)

Two separate decontamination lines shall be established for personnel and sampling equipment in the CRZ. The CRZ should be marked as narrow corridors through which personnel and equipment pass from the EZ to the SZ/CZ.

2.5.2.3 Transition Zone (TZ)

An additional buffer or TZ will be established upwind or crosswind of the contaminated zones and serve as support for sample QA/QC and packing. Coolers in this zone will be protected from contamination using polyethylene sheeting and decontaminated prior to leaving the site.

2.5.2.4 Exclusion Zone (EZ)

The EZ is defined as an area with an approximately 30 foot radius around intrusive activities. Access should be restricted to field sampling crews and necessary equipment operators.

2.5.3 Site Security

Access will be limited to all controlled areas via the prescribed administrative (certifications) and engineering (barricades) controls. All site staff and visitors will note arrival and departure times on the Employee/Visitor Roster. All equipment, tools and property shall be secured at the end of the day.

2.5.4 Communications

The "buddy system" will be enforced for field activities involving potential exposure to hazardous or toxic materials, and during any work within the exclusion zone. Each person will observe their buddy for systems of chemical or heat over exposure and will provide first aid or emergency assistance when warranted. A mobile phone will be maintained onsite for emergency use.

The following emergency hand signals will be used:

- Thumbs up — OK; understand
- Thumbs down — No; negative
- Grasping buddy's wrist — leave site now
- Hands on top of head — Need Assistance
- Horn-one long blast — Evacuate site
- Horn-two short blast — All clear, return to site

2.6 SANITATION AND ILLUMINATION

Potable drinking water is not available at the site and is the responsibility of the subcontractor. Water should be stored in tightly closed containers and sanitary, single-use disposable cups should be supplied and clearly marked for their intended use. Public restrooms in the area are available. Since the nature of this project is mobile and the duration less than 1 week no permanent/change facility will be provided.

It is anticipated that all site work will be conducted during daylight hours. If circumstances arise in which field work is to be conducted before or after daylight, or sunlight is obstructed, illumination within all general site areas will be at or above 5 foot-candles.

2.7 AMBIENT AIR SURVEILLANCE

The following protocol will be enforced during the project to maintain safety related to risk of inhalation to workers or offsite migration of dust or respiratory particles.

2.7.1 Type and Frequency of Monitoring

Type	Minimum Recommended Frequency
Background:	Once per day in the work area and perimeter using direct-reading instruments, prior to any intrusive activities or equipment startup
Perimeter:	Once per hour using direct-reading instruments during intrusive activities
Personnel:	At least twice per day in the breathing zone of those with the highest anticipated exposure during intrusive activities.

2.7.2 Monitoring Instruments

The SHSC will maintain equipment instructions onsite that specify calibration, general use, and trouble shooting procedures. All direct reading instruments will be field calibrated prior to the start of fieldwork daily according to manufacturers instructions, and will be recorded in the calibration log.

Equipment	Contaminant	Work Activity
MiniRam Dust Monitor	Nuisance and potentially contaminated dust	Excavation

2.7.3 Action Levels

Action levels should be established for upgrading/down grading PPE, work stoppages, and evacuation. Actin levels for upgrade/downgrade of respirator are sustained readings above background in the breathing zone of site personnel. Record readings on Air Surveillance forms. Document equipment calibration.

2.8 DECONTAMINATION PROCEDURES

If needed, procedures for decontamination of sampling tools and other related equipment will be specified in work plan. Separate areas should be established for personnel, sampling and heavy equipment decontamination.

2.8.1 Personnel Decontamination

2.8.1.1 Equipment

Long-handled soft bristled brushes, galvanized wash tubs or equivalent, pump activated sprayer, garbage cans with plastic liners and drums with liners, visqueen, paper towels and duct tape.

Decon Solution: Alconox (biodegradable lab-grade detergent); bottled water for rinsing

Procedures: Two stages of decon have been designated:

1. Intermediate: For periodic exits out of the exclusion zone during sample transport and management, or for short breaks.

Steps: Outer boot and glove wash with Alconox solution, outer boot and glove rinse, removal of outer glove and storage for later use, entering transition zone for sample management, return to exclusion zone wearing new or cleaned outer gloves.

2. Final: For use prior to cool down breaks, lunch and exciting the site.

Steps: Segregated equipment drop (for instruments and equipment requiring special decon as outlined in the Work Plan, outer boot and glove wash with Alconox solution, outer boot and glove rinse, removal or disposal of outer boots, removal and disposal (if not cleaned to "line new" condition) of outer gloves, removal and disposal of coverall, removal and disposal of inner gloves in designated receptacles, and general field wash for personal hygiene.

2.8.2 Equipment Decontamination

All equipment that will potentially contact samples will be decontaminated prior to, and following, sample events. Heavy equipment in direct contact with soil such as a backhoe buckets, shall be streamed cleaned on site and be inspected by the FM prior to leaving the site. The permanent decon area (for steam cleaning) will be designated by the FM once on site, and will be constructed by the equipment subcontractor (see Engineering Controls, Section 2.2). Temporary decon stations (bucket wash) will be located near work areas, and will be positioned up- or cross-wind of operations.

2.8.3 Disposal Procedures

All discarded materials that accumulate from onsite activities (PPE, decon fluids, supplies, etc.) will be segregated by matrix and by source location and properly disposed. Hazardous materials

will be placed in labeled DOT approved, 55 gallon drums; and be stored in a secure, designated, and fenced location. Analytical results will be evaluated prior to disposal, if possible. All IDW will be handled, labeled, stored and inventoried.

2.9 EMERGENCY ACTIONS

2.9.1 Preplanning and General Procedures

2.9.1.1 General Emergency Information

Site personnel should be constantly alert to recognize potentially unsafe work practices, hazardous work environments, and IDLH conditions. Personnel should be routinely reminded of signs and symptom of chemical and heat over exposure. Emergency response procedures (this section) should be reviewed daily. Pre-arrange access for emergency crews when necessary.

In the event of a large-scale spill, fire/explosion, or major emergency, the FM is expected to notify the PM; the PM notifies the client, evacuates the area; and lets appropriately trained emergency staff respond to the situation. The safety and well being of site personnel, visitors and the adjacent community will be of utmost importance in determining the appropriate response to a given emergency.

2.9.1.2 Emergency Coordinator (EC)

The FM or SHSC will serve as the EC during an actual emergency response situation. The FM or SHSC will serve as the primary EC at all times; first aid and rescue duties are shared between the first-aid/CPR trained team members. All foreseeable first-aid and rescue equipment should be stored on site in an accessible area. The EC will contact off-site emergency response agencies and serve as the main spokesperson when responders arrive onsite.

2.9.1.3 Site Maps

An updated site map (see Site Control, Section 4.0) that is used during daily tailgate meetings will be used to inform the staff of hazardous areas, zones, boundaries, site terrain, evacuation routes, work crew locations, and any site changes. In the unlikely event that an emergency occurs, the problem areas will be pinpointed on the site map, and pertinent information, such as weather and wind direction, temperature, and forecast, will be added as obtained. This map will be provided to responding agencies.

2.9.2 Emergency Decontamination

For first-aid of non-life-threatening injuries, evacuate to decontamination line and decontaminant as much as possible or practical; contaminated clothing should be removed. For life-threatening injuries/exposures, field decontaminate as much as possible for his/her own safety, wrap in a

blanket or polyethylene sheeting, and immediately transport to the designated medical facility. Also, phone ahead and bring this HSP for informational purposes and MSDS access by medical staff (See Emergency Response, Section 8).

2.9.2.1 Safe Refuge Area

The location of the Safe refuge Area will be discussed in the tailgate meetings by the EC daily once onsite. It will set be set up in the Support Zone or at an offsite location in the event of a sitewide evacuation. This area will be upwind and the location and escape routes will be designated on the site control maps. It will contain emergency equipment, escape route maps, communications and the Emergency Reference (call) List. This is required for all phases of work.

2.9.2.2 Site Security and Control

In an emergency, the EC will take a "head count" against the Employee/Visitor Daily Roster, initiate search/account for missing persons, notify the emergency crews (as applicable), and limit access into the hazardous emergency area to necessary rescue and response personnel in order to prevent additional injury and possible exposures.

2.9.2.3 Emergency Equipment

All items must be checked and maintained by the SHSC at least weekly and after each use.

(√) First-aid Kit	(√) Fire Extinguisher	( ) Water	( ) Other_____
( ) Spill Equipment	(√) Mobile Phone	( ) Fire Blanket	

2.9.2.4 Evacuation Procedures

Expeditious evacuation routes to the safe refuge area(s) will be established daily for all work area locations, with respect to the wind direction. Evacuation notification will be a continuous blast on a canned siren, vehicle horn, or direct verbal communication. Emergency drill should be performed periodically; up date plan.

In the unlikely event that an evacuation is necessary, all personnel will immediately proceed to the pre-determined safe refuge area, decontaminating to the extent possible for personal safety, based on the emergency. The EC should then begin the Site Security and Control Measures.

2.9.3 Site Specific Response Scenarios

2.9.3.1 Natural Disasters

WEATHER RELATED EMERGENCIES

All work will cease should any of the following weather conditions arise:

- Poor visibility
- Precipitation sever enough to impair safe moment/travel
- Lightning in the immediate area
- Winds in excess of 40 miles an hour
- Flooding
- Other conditions as determined by the FM

EARTHQUAKE

Remain clear of buildings, overhead power lines, and evacuations. Stop all work tasks and use of equipment. Carefully check all work areas and equipment before restarting site work.

FIRE OR EXPLOSION

Summon the EC who will decide whether to respond to "manageable" incidents with portable fire extinguishers after calling the City of Oakland Fire Department (911) for outside assistance. Personnel should not attempt to extinguish a fire that is greater than half the size of the observer. Calls to the fire department should not be delayed pending results of successful extinguishing of fire. The EC will evacuate all non-response personnel and visitors to the Safe Refuge Area; will notify the PM, as applicable, and the client; and will complete the appropriate reports.

2.9.4 Medical Emergency Response

2.9.4.1 Injury Accident to Project Personnel or Visitors

Summon the EC who will assess the situation, taking first necessary precautions for personal safety (e.g., PPE) if needed. The EC will determine whether to transport the injured party to the hospital (**Summit Medical Center**) in Oakland or summon the ambulance at 911. Provide first aid to the extent possible while awaiting medical attention. The SHSC will complete a Medical Treatment Authorization form to be submitted to Summit Hospital for treatment of the injured worker. The FM will conduct an investigation and complete the Supervisor's Report of Injury or Illness and the First Aid Incident Report forms and make appropriate company and client notifications.

2.9.4.2 Bloodborne Pathogen

1. Exposure Determination

   Any Field personnel trained in first-aid response has the potential to be exposed to bloodborne pathogens. Tasks where exposures could occur include responses to bleeding injury and CPR.

2. Exposure Control

   A. Personal protective equipment: While rendering first aid where exposure to blood may occur, don protective gloves (N-Dex Nitrile undergloves or Nitrile overgloves) and use a rescue Breather Devise (with one-way valve) if administering CPR. The gloves and Rescue Breather Devise should be readily available in all first aid kits.

   B. Hepatitis B Vaccination: First-aid providers whose primary job assignment is not first-aid administration do not need to receive a pre-exposure hepatitis B vaccines. All first-aid providers assisting in any situation involving an exposure incident must be offered the full Hepatitis B immunization series no later than 24 hours after the incident.

   C. Exposure Incident Evaluation: All first-aid incidents involving exposures must be reported to Geological Technics Administration before the end of the work shift in which the incident occurs. A First-aid Incident Report must be completed describing the circumstances of the accident and response. Following a report of an exposure incident. Geological Technics shall make immediately available tot he exposed employee a confidential medical evaluation and follow-up.

2.9.5 Spill of Hazardous Materials

After taking precautions for personal safety, contain the spill if possible with on site equipment, to the extent that the responder's training and capability allows. The EC will evacuate all non-response personnel and visitors to the refuge area. Contained material must be properly drummed and handled as hazardous waste. The FM will notify the client to contact appropriate agencies within 24 hours after the occurrence, provided the spill is greater than the reportable quantity.

2.9.6 Accident Reporting and Record keeping

The SHSC will contact the HSM; conduct an investigation jointly with the FM; and complete the Supervisor's Report of Injury or Illness and First Aid Incident Report. These completed reports must be transmitted to the HSM within 24 hours of an occurrence, a fax is acceptable. The HSM

will submit the appropriate reports to the applicable Workers Compensation Office and the Contracting Officer (per contractual requirements); and CAOSHA (as applicable).

The foreman or field supervisor of subcontracting crews will investigate and complete an accident report in accordance with their internal company policy.

2.9.7 Emergency Reference List

(Keep posted in vehicles and near communication system-mobile phone)

MEDICAL EMERGENCIES

HOSPITAL NAME	**HOSPITAL ADDRESS**
Summit Medical Center	350 Hawthorne Ave Oakland, CA 94609
HOSPITAL TELEPHONE	**DIRECTIONS**
(510) 869-6600	Depart 41st Street Heading South Left (East) onto W MacArthur Blvd Right (South) onto Telegraph Rd Left (East) 34th Street Emergency Entrance Total 1.6 Miles

EMERGENCY SERVICES

SERVICE	**NAME**	**TELEPHONE NUMBER**
Ambulance		911
Fire Department	City of Oakland	911
Poison Control Center		(800) 876-4766

EMERGENCY CALL LIST

TITLE	**NAME**	**TELEPHONE NUMBER**
Health and Safety Manager	Ronald M. Block, Ph.D.	(925) 682-7200
Project Manager	Ronald M. Block, Ph.D.	(925) 682-7200
Field Manager		
Client Contact		
Excavator and Transporter		
CALOSHA		(800) 963-9424