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UNDERGROUND STORAGE TANK CLOSURE AND SUPPLEMENTAL SOIL AND GROUNDWATER INVESTIGATION REPORT FORMER BOYSEN PAINT FACILITY, 41ST STREET EMERYVILLE, CALIFORNIA

08/16/93

PREPARED FOR

ALAMEDA COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION

AND
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

PREPARED BY
ENVIRONMENTAL STRATEGIES CORPORATION

AUGUST 16, 1993

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Introduction

This report has been prepared by Environmental Strategies Corporation (ESC) on behalf of Grow Group, Inc., for submission to the Alameda County Department of Environmental Health (Alameda DEH) and the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. The report provides a description of the in-place closure activities for an underground storage tank located at the Former Boysen Paint Co. Facility on 41st Street in Emeryville, California. The underground storage tank was formerly owned and used by Boysen Paint Co., which ceased operations at the site in the early 1980's. The closure activities were conducted pursuant to a request dated September 22, 1993, from the Alameda DEH. The Alameda DEH requested that the tank either be closed in place or removed from the site. It also stated that Grow Group must comply with all applicable provisions of Chapter 6.5 of Division 20 of the California Health and Safety Code. The Alameda DEH stated that the approval for in-place closure of the tank would depend on whether the tank could not be removed due to physical barriers (such as utility lines) and whether removal would affect the integrity of a building. A work plan for in-place closure was submitted on October 22, 1992, and subsequently approved by the Alameda DEH in March 1993.

This report includes a description of the tank, fittings, and piping conditions found during the tank excavation; evidence of contamination; and sampling methods and locations. Additionally, a supplemental soil and groundwater investigation was required as described in the September 1992 correspondence from the Alameda DEH. This report also includes a description of this investigation, the field procedures, and the investigation results.

Site Description

Area and Property Description

The site was formerly owned by Boysen Paint Company, which ceased operations in the early 1980's and was subsequently merged into the Ameritone Paint Corporation, a wholly owned subsidiary of Grow Group. The site is now owned by Mr. and Mrs. Edward Kozel and operated by Oakland

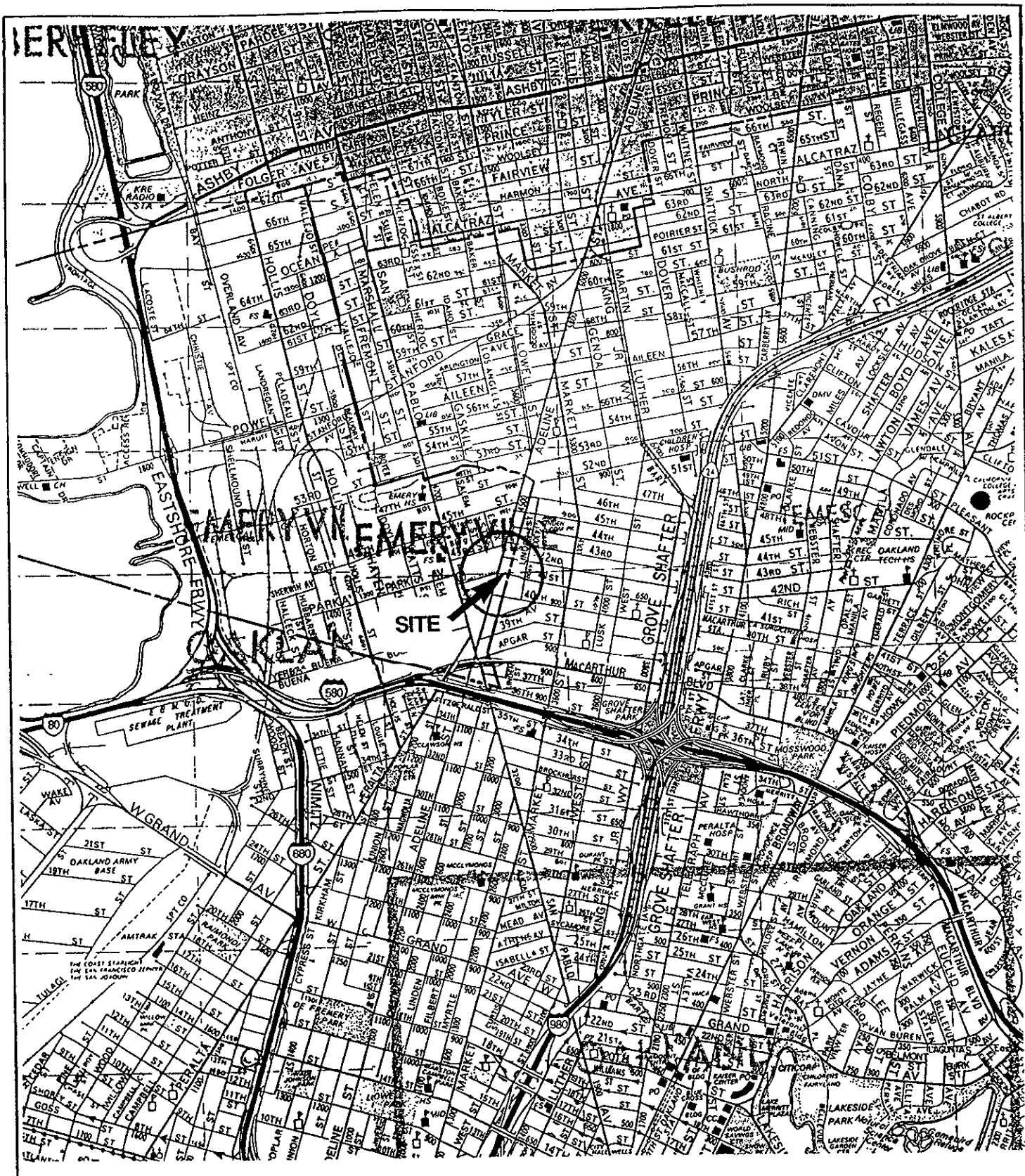
National Engravers (ONE). The property also contains a furniture restoration shop known as Rockridge Furniture Refinishing. The underground storage tank is located on the north side of 41st Street, approximately 125 feet east of its intersection with Adeline Street in Emeryville, California (Figure 1). The tank was installed under the sidewalk between the rear of the brick building owned by ONE and occupied by Rockridge and the northern curb of 41st Street (Figures 2 and 3). Boysen formerly used the tank for storing mineral spirits for manufacturing paint.

Background and Summary of Previous Site Investigations

In May 1981, Mr. and Mrs. Kozel purchased the property located at 1001 42nd Street in Emeryville, California, from the Boysen Paint Company and subsequently ONE began operating on the site. As part of the sale conditions, Boysen Paint agreed to remove tanks known to exist on the property except for a single 10,000 gallon underground vessel partitioned into two tanks that was located in the truck loading area. At the Kozel's request, this tank was left in place at the time the property was purchased by the Kozels. In February 1987, the tank in the truck loading area was removed by ONE. Reportedly, floating organic matter was observed on the surface of groundwater that entered the excavation during tank removal. After the tank was removed, ONE installed a monitoring well (LD4) adjacent to the loading dock. Details of the removal of this tank and the date of well installation are unknown.

In August 1986, the site owners informed Grow Group that an underground storage tank reportedly used by the former Boysen Paint Company existed under the sidewalk on the north side of 41st Street. In January 1987, Grow Group agreed, without admission of liability, to proceed with closure of the tank.

In May 1987, OHM Corporation conducted a ground penetrating radar (GPR) survey of the site to identify buried structures that might affect proper closure of the tank. The survey identified the limits of the tank and three underground utility lines: a gas line running parallel to the sidewalk and approximately 2 feet south of the building; a water pipeline running parallel to the sidewalk approximately 7 feet south of the curb; and an unidentified structure at the eastern end of the tank (Figure 3).



Source: The Thomas Guide, 1988, Alameda and Contra Costa Counties Street & Directory

N

Scale: 1 inch = 2,200 feet

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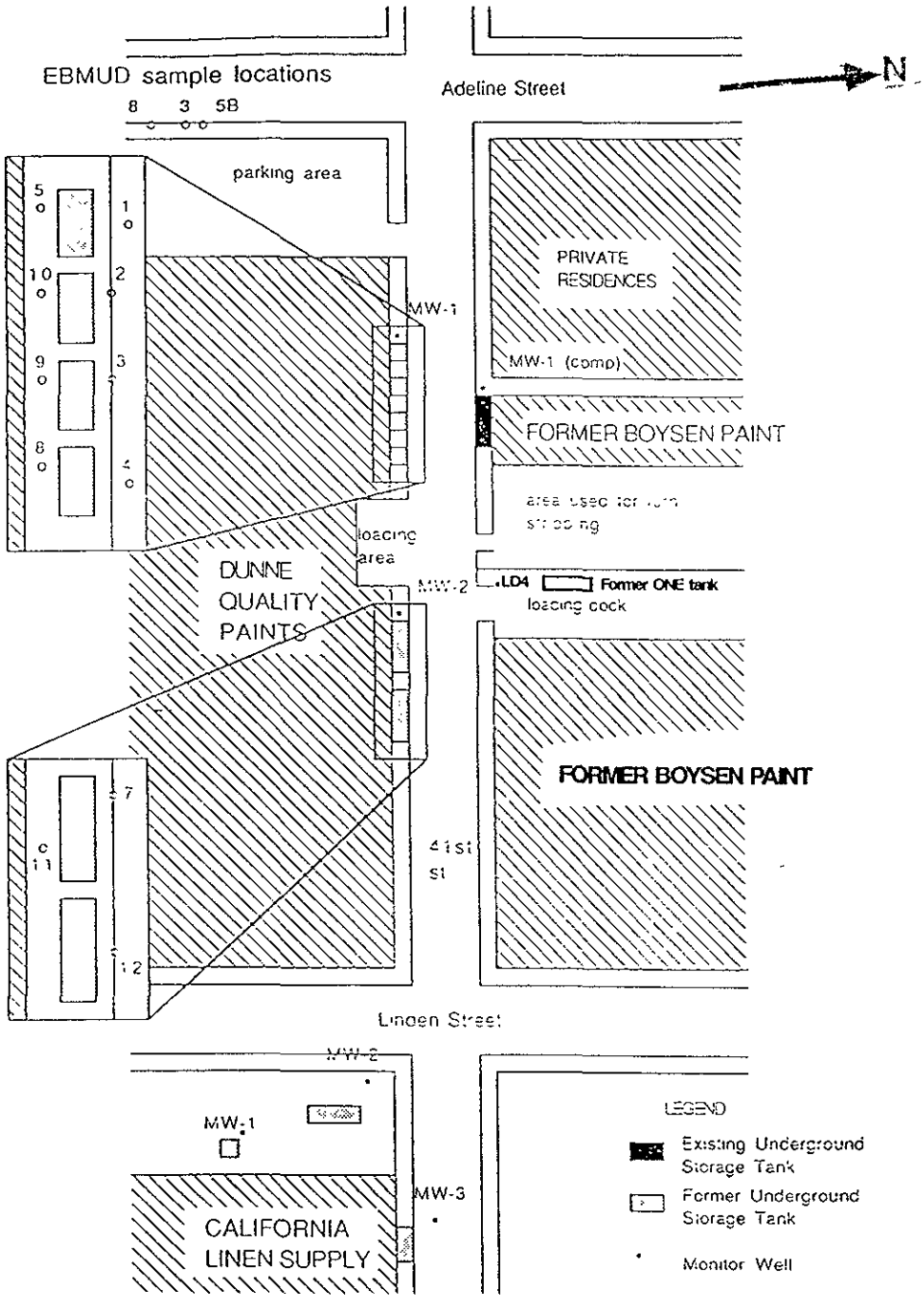
Figure 1
Site Location
Former Boysen Paint Company
Emeryville, California



Source: OHM Remedial Services Corp., 1991.

Not to Scale

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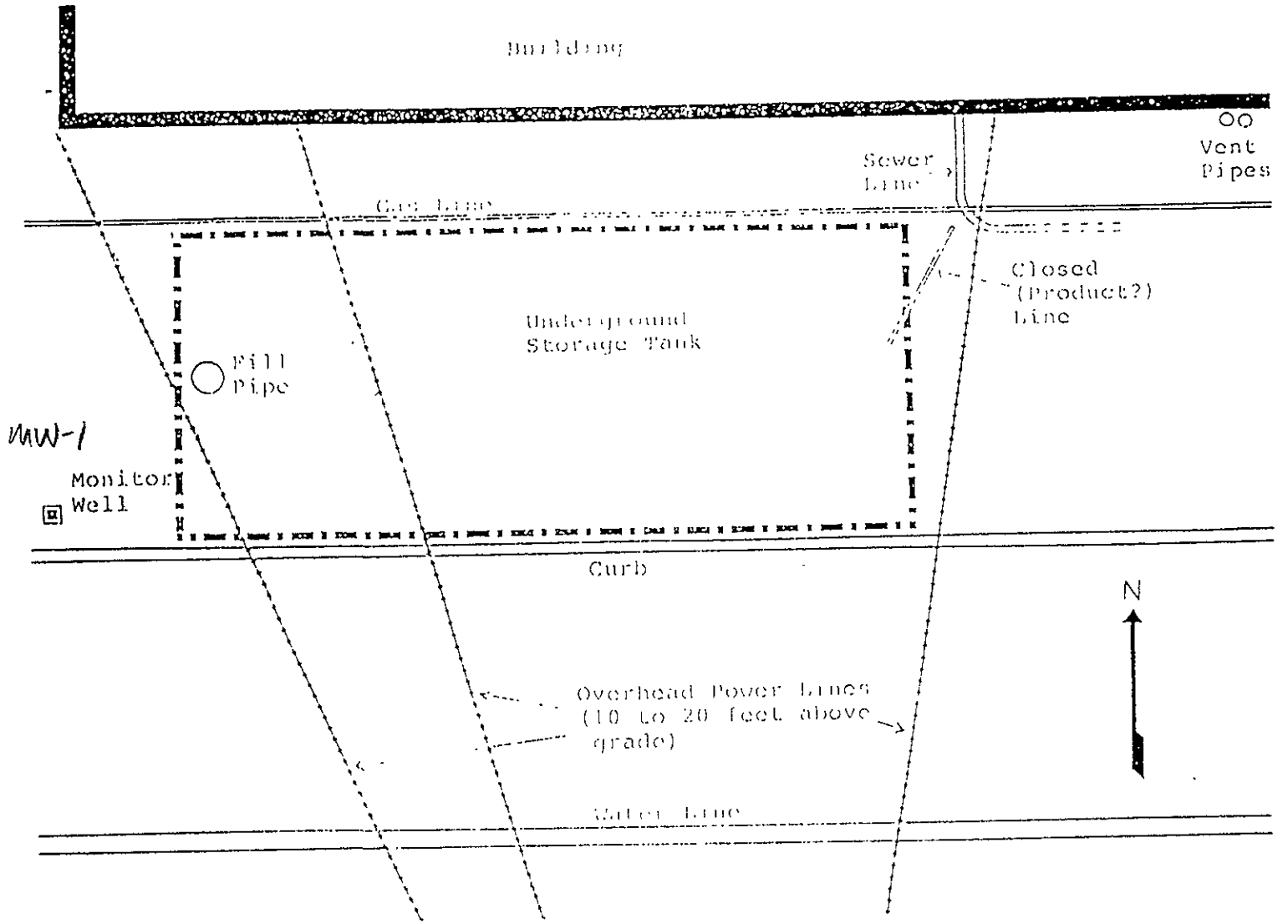
Figure 2
Site Layout
Former Boysen Paint Company
Emeryville, California



Scale: 1 inch = 4 feet

Source: OHM Remedial Services Corp., 1991.

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Figure 3
Locations of Underground Storage Tank and Proximity to Utility Lines
Former Boysen Paint Company
Emeryville, California

On February 9, 1988, OHM installed a temporary groundwater monitoring well adjacent to the former Boysen Paint tank and collected a groundwater sample for chemical analysis. Based on the presence of methylene chloride at 0.72 mg/l and total petroleum hydrocarbons (TPH) at 610 mg/l in the sample, OHM recommended that a permanent groundwater monitoring well be installed at the site, the associated piping at the east end of the tank be inspected, and the contents of the tank be removed and disposed.

On April 4, 1990, approximately 610 gallons of solvents, sludge, and water were pumped from the tank with a vacuum truck and transported to Solvent Services Inc. in San Jose, California, for recycling or disposal at a licensed facility. OHM then removed a portion of the sidewalk to accurately locate the utility lines and structures observed during the 1987 GPR survey. A 2-inch diameter gas line was identified 2.75 feet south of and parallel to the building at a depth of 2.2 feet below ground surface. Other utility lines located during the excavation are shown on Figure 3.

On May 15, 1990, OHM installed a permanent 22-foot-deep groundwater monitoring well (now identified as MWB-1) at the western end of the underground storage tank (Figure 3). A composite soil sample of cuttings removed from the borehole contained 250 mg/kg of TPH. However, part of the soil sample was collected from below the water table and may have been affected by the migration of target constituents in groundwater (OHM 1991). The soil sample was not analyzed for other contaminants. After the well was installed and developed, a groundwater sample was collected and analyzed for TPH (Environmental Protection Agency {EPA} Method 8015) and volatile organic compounds (VOCs, EPA Method 624). Compounds detected in the groundwater sample included TPH (57 mg/l), methylene chloride (0.0114 mg/l), and benzene, toluene, ethylbenzene and total xylenes (BTEX) (less than 0.0025 mg/l).

On September 30, 1991, Aqua Terra Technologies (ATT) collected groundwater samples from MWB-1 (referred to as "41st" in ATT's report, dated January 8, 1992) and LD4 (now identified as MWLD-4) on ONE's property. The groundwater samples collected from MWB-1 were analyzed for total purgeable petroleum hydrocarbons (TPPH by EPA Method 5030) and total extractable petroleum

hydrocarbons (TEPH, EPA Method 3510), purgeable hydrocarbons (EPA Method 601), and total dissolved solids (TDS, EPA Method 160.1). The groundwater sample from MWB-1 contained TPPH (18,000 mg/l), kerosene (29,000 mg/l), toluene (5.6 µg/l), ethylbenzene (250 µg/l), and total xylenes (980 mg/l). The level of TDS in MW-1 was reported at 526,000 µg/l. The groundwater sample collected from LD4 was analyzed for BTEX and TDS only. This sample contained concentrations of benzene (2.0 µg/l), toluene (3.1 µg/l), ethylbenzene (9.0 µg/l), and total xylenes (24 µg/l). The level of TDS in LD-4 sample were reported at 695,000 µg/l.

Underground Storage Tank Closure Procedures and Methodologies

Underground Storage Tank Closure Activities

The underground storage tank in-place closure plan and application were submitted October 22, 1992, and November 13, 1992, and were approved by the Alameda County DEH on March 24, 1993. In-place closure of the underground storage tank was proposed to consist of excavating the overburden and gaining access to the tank. The tank would then be tested for integrity and soil samples would be collected for analysis. Piping would be uncovered, cut, and plugged as necessary, and inert material would be added to the tank.

Actual closure activities began on May 11, 1993. The sidewalk was removed with a jack hammer to expose soil to be excavated and the concrete was stockpiled and disposed. A flame ionization detector Foxboro OVA-128 was used to evaluate the organic vapor concentrations present in the breathing zone. The excavation uncovered the top of the tank at the fill pipe and proceeded eastward toward the product lines. It was determined that the tank size was greater than 5,000 gallons. Additional concrete was removed from the sidewalk to expose more soil for excavation and the excavation continued until the product line and vent line were encountered and the eastern end of the tank was uncovered. The depth of the excavation pit was approximately 5 feet. The underground storage tank was measured and determined to have a capacity of 8,000-gallons. Product vent lines from the tank to beneath the building, were excavated 2.5 feet below the ground surface (bgs) to the point where the lines entered the building through its foundation. After the underground storage tank and lines were uncovered, seven additional pipelines were discovered (Figure 4). A water line and Pacific Gas and Electric (PG&E) gas line were encountered at approximately 1 foot bgs running east to west. Two unknown broken lines were discovered midway along the tank and at the eastern edge of the tank, approximately 4 foot bgs. Another line running north to south appeared to be intact. Two other unidentified lines appeared to be vent or product lines for the former ONE tank removed in February of 1987. The two unknown broken lines (shown on Figure 4 as numbers 1 and 2) the vent line, and the product line were cut and capped to

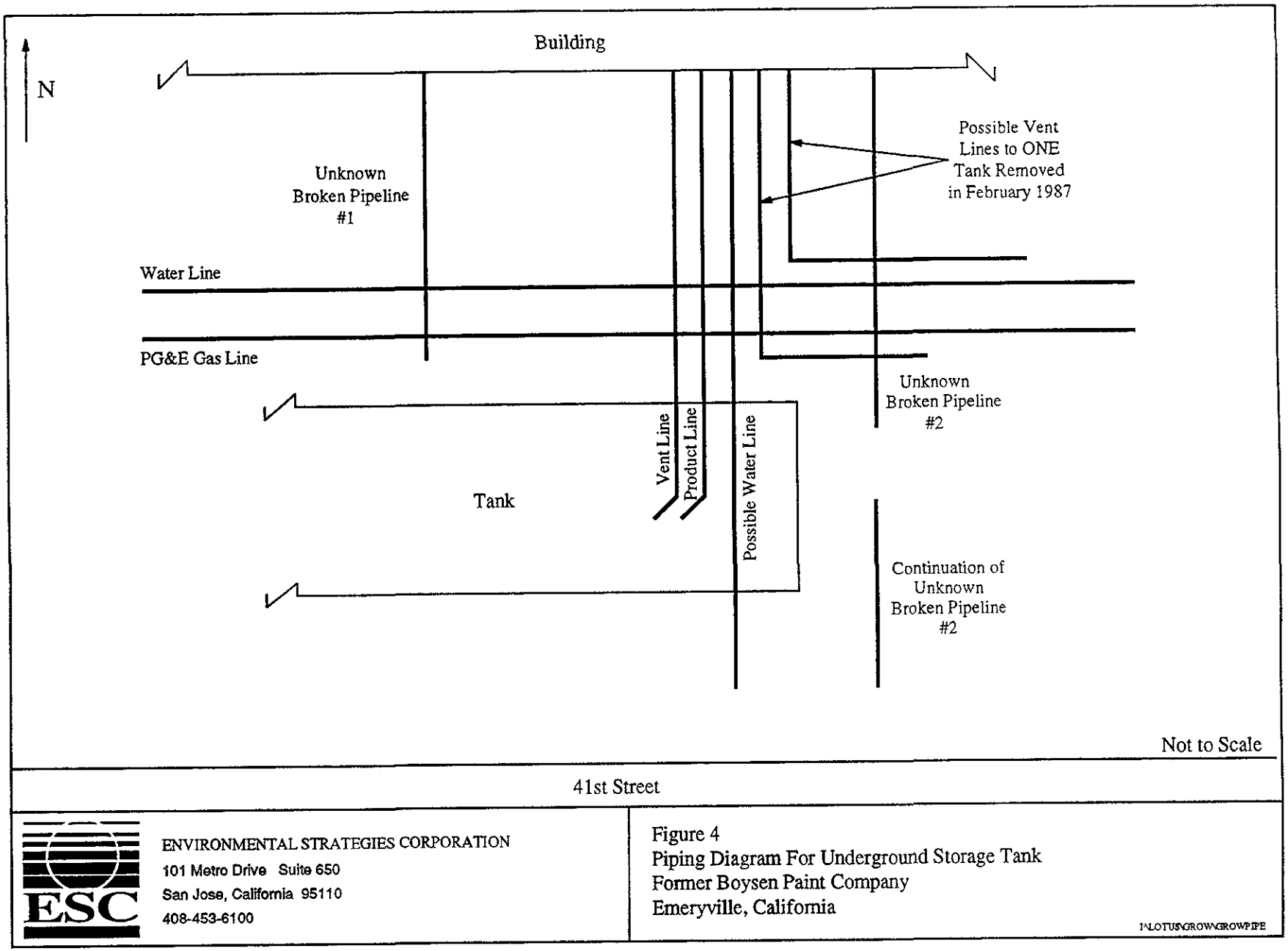

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Figure 4
Piping Diagram For Underground Storage Tank
Former Boysen Paint Company
Emeryville, California

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prevent any possible residual discharge from the piping. The two assumed vent or product lines were removed and capped at a point 2.5 feet bgs.

ESC examined the top of the tank surface and the connected lines for signs of leaks. Signs of weakness and holes were found in the connected lines and soil discoloration in the product-line trench was observed (Appendix A).

Approximately 25 tons of soil were excavated from above the tank and placed into two roll-off bins. A composite sample of soils was taken from the roll-off bins and profiled by Chemical Waste Management, Inc. (CWM). The soils were subsequently disposed of as a California regulated onsite under manifest at the CWM Facility in Kettleman Hills, California.

ESC attempted to triple rinse the tank before the lines were uncovered. Because the incline of the tank allowed rinse water to pool at the east end, a thorough flushing could not be achieved. The tank was triple rinsed again after the vent line on the east end of the tank was exposed and disconnected. A suction hose was lowered through the vent line and the pooled rinse water was removed. Approximately 1,250 gallons of rinse water were collected in a vacuum truck and sent for recycling under manifest to Gibson Oil in Redwood City, California. Copies of all hazardous waste manifests are provided in Appendix B.

A sample was collected from water found in the excavation. The liquid was emanating from an unknown source coming from beneath the building adjacent to the excavation. The sample was collected with a skimming cup and analyzed for TPPH, TEPH by EPA method 8015, and VOCs by EPA Method 8240.

Soil samples were collected at a depth of 7 feet bgs from the four side walls of the tank excavation at the request of Alameda DEH to determine the present soil conditions around the tank just above the water table. The four soil samples were analyzed for TPPH, TEPH, and VOCs.

The tank was pumped full of a cement slurry. A total of 39 cubic yards of slurry was required to fill the tank. The pit was then backfilled with pea gravel and cement finishers completed the pouring and resurfacing of the sidewalk.

Precision Tank Testing

To determine the integrity of the tank and its components properly and accurately, the tank and lines were pressure tested together and separately on the morning of May 13, 1993, by NDE Environmental Corporation. The initial test isolated a section of the product line and the tank and showed that the product line from the tank did not hold pressure. The line was examined closely and holes were found in it. The second test isolated the tank, which passed the pressure test.

Procedure

The NDE Ullage precision leak test system, Model Tank-4T, was used at the site. The system was designed and developed to provide safe and reliable nonvolumetric precision leak tests. The system is certified by the Midwest Research Institute as meeting the EPA tank testing protocol.

The protocol tells whether the tank tightness testing method complies with the performance requirements of the federal underground storage tank regulations. The evaluation was conducted by the equipment manufacturer or a consultant to the manufacturer according to the EPA's "Standard Test Procedure for Evaluating Leak Detection Methods: Nonvolumetric Tank Tightness Testing Methods."

NDE Environmental used a mobile pressure testing system to introduce nitrogen into the tank on three different occasions. The rate at which the pressure increased, compared to the rate of pressure increase expected, was used as an indicator of a leak; then the rate of change in pressure after stabilization was used to determine if the tank or line had failed.

Results

The tank passed the pressure test. The Ullage test system provides a pass/fail nonvolumetric result that meets the EPA requirements for 0.1 gallons per hour leak detection with a probability of detection of 95 percent and a probability of false alarms of .05 percent. The product line showed visible leaks during testing. Results of the pressure test are provided in Appendix C.

Soil Investigation

Soil Investigation Procedure

After the top of the tank and the lines were uncovered, soil samples were taken at both ends of the tank (east and west samples), both sides of the tank (north and south samples), and in the product-line trench. The soil samples around the tank were taken above the saturated zone in the capillary fringe at a depth of approximately 7 feet bgs (Figure 5). The depth to groundwater at the time of sampling was approximately 8 feet bgs as measured in MWB-1. The product-line trench sample was taken directly beneath the product line at a depth of approximately 2.5 feet bgs.

Soil samples were collected from each side of the tank by hand auguring to a depth of approximately 7 feet bgs. The samples were collected using a split-spoon sampler containing one 6-inch-long brass sleeve. Samples were collected by advancing the boring to a point immediately above the sampling depth and then driving the sampler through the boring and into the soil. The sampler was driven at least 6 inches with a slide hammer by repeatedly pounding the top of the rod attached to the sampler.

Soil samples were collected from the product-line trench by using a spoon sampler containing one 6-inch-long brass sleeve. Samples were collected by driving the sampler into the soil. The sampler was driven at least 6 inches with a slide hammer repeatedly pounding the top of the rod attached to the sampler.

After recovery of the sampler, the brass sleeves were removed from the drive sampler, covered at each end with Teflon material, capped, labeled, sealed in airtight bags, and placed on ice for delivery to Sequoia Analytical Laboratory, a California State Certified laboratory. A chain-of-custody record accompanied the shipment and is included in this report as Appendix D.

To avoid the possibility of introducing contamination from one boring to another, the hand auger and sampling device were decontaminated between borings using nonphosphate liquid detergent followed by a double rinse and were air dried. All equipment used on-site that may have come into contact with contaminated soil or liquid was decontaminated before the equipment left the site.

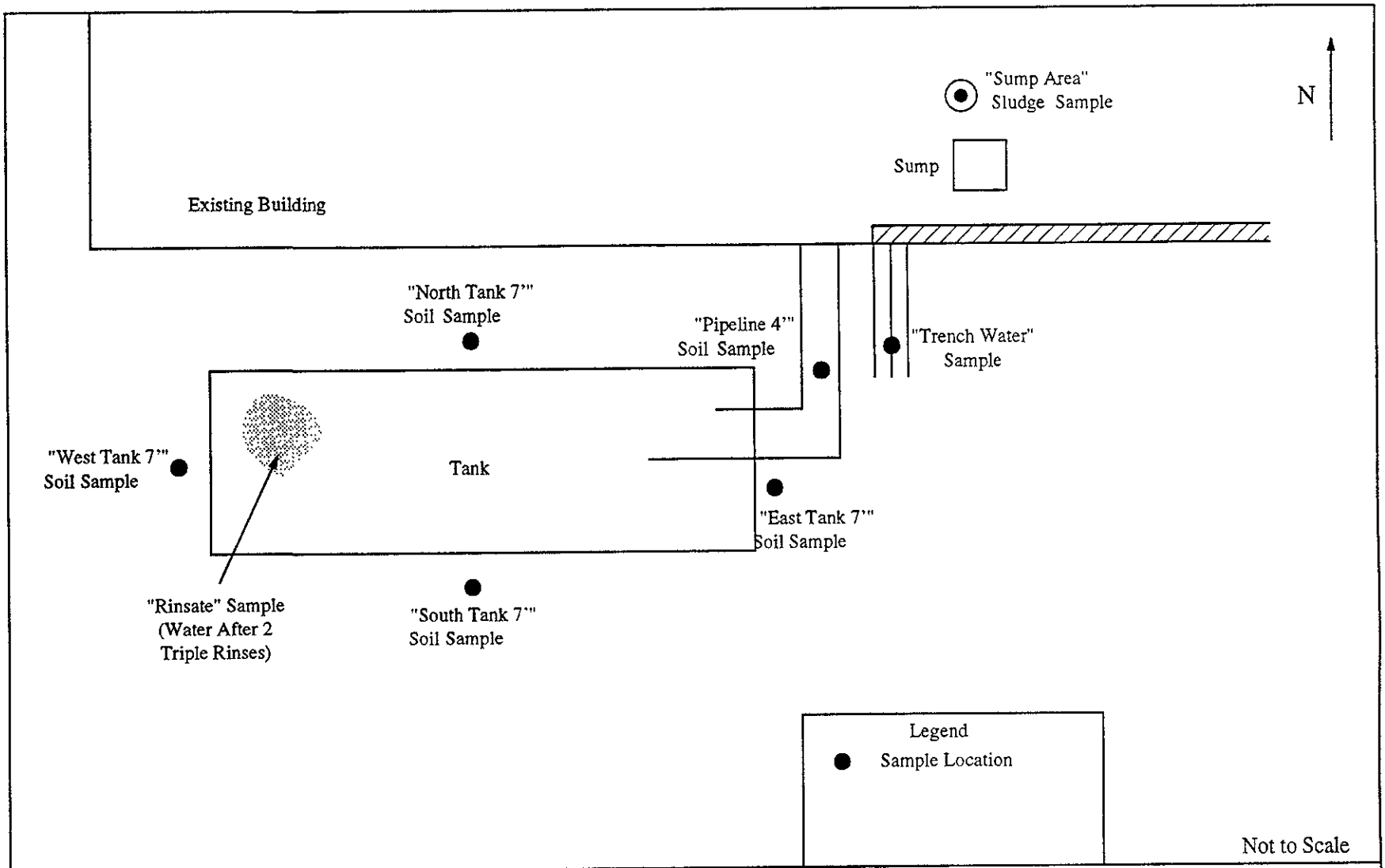

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Figure 5
Underground Storage Tank Sample Locations
Former Boysen Paint Company
Emeryville, California

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While excavating adjacent to the building where several pipe lines are located, a floating product on top of what was presumed to be water was flowing from beneath the building at approximately 2.5 feet bgs. The fluid appeared to be from a source other than the underground storage tank and associated pipelines. A sample of the fluid was collected for analysis for VOCs, TEPH, and TPPH.

ESC was allowed access to the Rockridge Furniture Refinishing Company by a Rockridge facility manager to inspect the building for any evidence of pipes that might connect to the existing underground storage tank. While inspecting the Rockridge operations for underground piping locations, ESC collected a soil sample from a drain cleanout situated near a 2-foot by 2-foot sump located in the outdoor yard area. The sample was collected using a spoon sampler as explained above.

The laboratory analytical summary for all samples is provided in Table 1 and Appendix E.

Soil Investigation Results

All soil samples collected from the underground storage tank excavation for verification contained no detectable levels of VOCs except for low levels of xylenes (400 to 800 ug/kg) in the west, east, and pipeline soil samples.

The following discussion of analytical results comments on the presence of TPPH and TEPH and any compounds appearing in the TPH range. In addition to reporting the TPPH and TEPH concentrations, the TPH chromatogram pattern was also reported as required by the Leaking Underground Fuel Tank (LUFT) field manual (October 1989). For example, a carbon chain range C9-C12+>C18 in a TEPH analysis indicate that carbon is present in chains of 9 through 12 and chains greater than 18, indicating the possible presence of gasoline and waste oils.

To determine the presence of mineral spirits, a chromatogram study was conducted for soil samples. The retention times and patterns in the sample chromatograms were compared to the chromatograms of other fuel hydrocarbon standards.

Table 1

Former Grow Group Facility
Underground Storage Tank Closure
Emeryville, California
May 13, 1993 (ug/kg) (a)

Analyte	West Tank 7 Feet Results	West Tank 7 Feet Detection Limit	North Tank 7 Feet Results	North Tank 7 Feet Detection Limits
Total Purgable Hydrocarbons (mg/kg)	610	50	420	200
Total Extractable Hydrocarbons (mg/kg)	1,700	100	330	50
BTEX				
Benzene	ND	250	ND	1,000
Toluene	ND	250	ND	1,000
Ethylbenzene	ND	250	ND	1,000
Total xylenes	400	250	ND	1,000
VOCs				
Acetone	ND	10,000	ND	1,300
Benzene	ND	2,000	ND	250
Bromodichloromethane	ND	2,000	ND	250
Bromoform	ND	2,000	ND	250
Bromomethane	ND	2,000	ND	250
2-Butanone	ND	10,000	ND	1,300
Carbon Disulfide	ND	2,000	ND	250
Carbon Tetrachloride	ND	2,000	ND	250
Chlorobenzene	ND	2,000	ND	250
Chloroethane	ND	2,000	ND	250
2-Chloroethyl vinyl ether	ND	10,000	ND	1,300
Chloroform	ND	2,000	ND	250
Chloromethane	ND	2,000	ND	250
Dibromochloromethane	ND	2,000	ND	250
1,1-Dichloroethane	ND	2,000	ND	250
1,2-Dichloroethane	ND	2,000	ND	250
1,1-Dichloroethene	ND	2,000	ND	250
cis-1,2-Dichloroethene	ND	2,000	ND	250
trans-1,2-Dichloroethene	ND	2,000	ND	250
1,2-Dichloropropane	ND	2,000	ND	250
cis-1,3-Dichloropropene	ND	2,000	ND	250
trans-1,3-Dichloropropene	ND	2,000	ND	250
Ethylbenzene	ND	2,000	ND	250
2-Hexanone	ND	10,000	ND	1,300
Methylene chloride	ND	5,000	ND	630
4-Methyl-2-pentanone	ND	10,000	ND	1,300
Styrene	ND	2,000	ND	250
1,1,2,2-Tetrachloroethane	ND	2,000	ND	250
Tetrachloroethene	ND	2,000	ND	250
Toluene	ND	2,000	ND	250
1,1,1-Trichloroethane	ND	2,000	ND	250
1,1,2-Trichloroethane	ND	2,000	ND	250
Trichloroethene	ND	2,000	ND	250
Trichlorofluoromethane	ND	2,000	ND	250
Vinyl acetate	ND	2,000	ND	250
Vinyl chloride	ND	2,000	ND	250
Total xylenes (total)	ND	2,000	ND	250

Table 1 (continued)

Former Grow Group Facility
Underground Storage Tank Closure
Emeryville, California
May 13, 1993 (ug/kg) (a)

Analyte	East Tank 7 Foot Results	East Tank 7 Foot Detection Limit	South Tank 7 Foot Results	South Tank 7 Foot Detection Limits
Total Purgable Hydrocarbons (mg/kg)	740	100	ND	1.0
Total Extractable Hydrocarbons (mg/kg)	740	10	8.3	1.0
BTEX				
Benzene	ND	500	ND	5
Toluene	ND	500	ND	5
Ethylbenzene	ND	500	ND	5
Total xylenes	800	500	ND	5
VOCs				
Acetone	ND	5,000	ND	500
Benzene	ND	1,000	ND	100
Bromodichloromethane	ND	1,000	ND	100
Bromoform	ND	1,000	ND	100
Bromomethane	ND	1,000	ND	100
2-Butanone	ND	5,000	ND	500
Carbon Disulfide	ND	1,000	ND	100
Carbon Tetrachloride	ND	1,000	ND	100
Chlorobenzene	ND	1,000	ND	100
Chloroethane	ND	1,000	ND	100
2-Chloroethyl vinyl ether	ND	5,000	ND	500
Chloroform	ND	1,000	ND	100
Chloromethane	ND	1,000	ND	100
Dibromochloromethane	ND	1,000	ND	100
1,1-Dichloroethane	ND	1,000	ND	100
1,2-Dichloroethane	ND	1,000	ND	100
1,1-Dichloroethene	ND	1,000	ND	100
cis-1,2-Dichloroethene	ND	1,000	ND	100
trans-1,2-Dichloroethene	ND	1,000	ND	100
1,2-Dichloropropane	ND	1,000	ND	100
cis-1,3-Dichloropropene	ND	1,000	ND	100
trans-1,3-Dichloropropene	ND	1,000	ND	100
Ethylbenzene	ND	1,000	ND	100
2-Hexanone	ND	5,000	ND	500
Methylene chloride	ND	2,500	ND	250
4-Methyl-2-pentanone	ND	5,000	ND	500
Styrene	ND	1,000	ND	100
1,1,2,2-Tetrachloroethane	ND	1,000	ND	100
Tetrachloroethene	ND	1,000	ND	100
Toluene	ND	1,000	ND	100
1,1,1-Trichloroethane	ND	1,000	ND	100
1,1,2-Trichloroethane	ND	1,000	ND	100
Trichloroethene	ND	1,000	ND	100
Trichlorofluoromethane	ND	1,000	ND	100
Vinyl acetate	ND	1,000	ND	100
Vinyl chloride	ND	1,000	ND	100
Total xylenes (total)	ND	1,000	ND	100

Table 1 (continued)

Former Grow Group Facility
Underground Storage Tank Closure
Emeryville, California
May 13, 1993 (ug/kg) (a)

Analyte	Pipeline 4 Foot Results	Pipeline 4 Foot Detection Limit	Sump Area Results	Sump Area Detection Limit
Total Purgable Hydrocarbons (mg/kg)	910	1.0	130	100
Total Extractable Hydrocarbons (mg/kg)	550	50	10,000	500
BTEX				
Benzene	ND	5	ND	500
Toluene	ND	5	1,000	500
Ethylbenzene	ND	5	1,300	500
Total xylenes	600	5	7,900	500
VOCs				
Acetone	ND	10,000	ND	1,000
Benzene	ND	2,000	ND	200
Bromodichloromethane	ND	2,000	ND	200
Bromoform	ND	2,000	ND	200
Bromomethane	ND	2,000	ND	200
2-Butanone	ND	10,000	ND	1,000
Carbon Disulfide	ND	2,000	ND	200
Carbon Tetrachloride	ND	2,000	ND	200
Chlorobenzene	ND	2,000	ND	200
Chloroethane	ND	2,000	ND	200
2-Chloroethyl vinyl ether	ND	10,000	ND	1,000
Chloroform	ND	2,000	ND	200
Chloromethane	ND	2,000	ND	200
Dibromochloromethane	ND	2,000	ND	200
1,1-Dichloroethane	ND	2,000	ND	200
1,2-Dichloroethane	ND	2,000	ND	200
1,1-Dichloroethene	ND	2,000	ND	200
cis-1,2-Dichloroethene	ND	2,000	ND	200
trans-1,2-Dichloroethene	ND	2,000	ND	200
1,2-Dichloropropane	ND	2,000	ND	200
cis-1,3-Dichloropropene	ND	2,000	ND	200
trans-1,3-Dichloropropene	ND	2,000	ND	200
Ethylbenzene	ND	2,000	1,400	200
2-Hexanone	ND	10,000	ND	1,000
Methylene chloride	ND	5,000	17,000	500
4-Methyl-2-pentanone	ND	10,000	ND	1,000
Styrene	ND	2,000	ND	200
1,1,2,2-Tetrachloroethane	ND	2,000	ND	200
Tetrachloroethene	ND	2,000	ND	200
Toluene	ND	2,000	1,100	200
1,1,1-Trichloroethane	ND	2,000	ND	200
1,1,2-Trichloroethane	ND	2,000	ND	200
Trichloroethene	ND	2,000	460	200
Trichlorofluoromethane	ND	2,000	ND	200
Vinyl acetate	ND	2,000	ND	200
Vinyl chloride	ND	2,000	ND	200
Total xylenes (total)	ND	2,000	14,000	200

Table 1 (continued)

Grow Group
UST Tank Closure - Emeryville, California
Samples Taken May 13, 1993 (ug/kg) (a)

Analyte	Rinsate Results	Rinsate Detection Limit	Trench Water Results	Trench Water Detection Limit
Total Purgable Hydrocarbons (~~mg/kg~~)	23,000	10,000	24,000	10,000
Total Extractable Hydrocarbons (~~mg/kg~~)	150,000	50,000	12,000	400
BTEX				
Benzene	ND	100	ND	100
Toluene	ND	100	ND	100
Ethylbenzene	130	100	ND	100
Total xylenes	380	100	300	100
VOCs				
Acetone	ND	100	ND	500
Benzene	ND	20	ND	100
Bromodichloromethane	ND	20	ND	100
Bromoform	ND	20	ND	100
Bromomethane	ND	20	ND	100
2-Butanone	ND	100	ND	500
Carbon Disulfide	ND	20	ND	100
Carbon Tetrachloride	ND	20	ND	100
Chlorobenzene	ND	20	ND	100
Chloroethane	ND	20	ND	100
2-Chloroethyl vinyl ether	ND	100	ND	500
Chloroform	41	20	ND	100
Chloromethane	ND	20	ND	100
Dibromochloromethane	ND	20	ND	100
1,1-Dichloroethane	ND	20	ND	100
1,2-Dichloroethane	ND	20	ND	100
1,1-Dichloroethene	ND	20	ND	100
cis-1,2-Dichloroethene	ND	20	ND	100
trans-1,2-Dichloroethene	ND	20	ND	100
1,2-Dichloropropane	ND	20	ND	100
cis-1,3-Dichloropropene	ND	20	ND	100
trans-1,3-Dichloropropene	ND	20	ND	100
Ethylbenzene	ND	20	ND	100
2-Hexanone	ND	100	ND	500
Methylene chloride	ND	50	ND	250
4-Methyl-2-pentanone	ND	100	ND	500
Styrene	ND	20	ND	100
1,1,2,2-Tetrachloroethane	ND	20	ND	100
Tetrachloroethene	ND	20	ND	100
Toluene	ND	20	ND	100
1,1,1-Trichloroethane	ND	20	ND	100
1,1,2-Trichloroethane	ND	20	ND	100
Trichloroethene	ND	20	ND	100
Trichlorofluoromethane	ND	20	ND	100
Vinyl acetate	ND	20	ND	100
Vinyl chloride	ND	20	ND	100
Total xylenes (total)	ND	20	130	100

Table 1 (continued)

Grow Group
UST Tank Closure - Emeryville, California
Samples Taken May 13, 1993 (ug/kg) (a)

Analyte	Travel Blank Results	Detection Limit
Total Purgable Hydrocarbons (mg/kg)	NA	
Total Extractable Hydrocarbons (mg/kg)	NA	
BTEX		
Benzene	NA	
Toluene	NA	
Ethylbenzene	NA	
Total xylenes	NA	
VOCs		
Acetone	ND	10
Benzene	ND	2
Bromodichloromethane	ND	2
Bromoform	ND	2
Bromomethane	ND	2
2-Butanone	ND	10
Carbon Disulfide	ND	2
Carbon Tetrachloride	ND	2
Chlorobenzene	ND	2
Chloroethane	ND	2
2-Chloroethyl vinyl ether	ND	2
Chloroform	ND	10
Chloromethane	ND	2
Dibromochloromethane	ND	2
1,1-Dichloroethane	ND	2
1,2-Dichloroethane	ND	2
1,1-Dichloroethene	ND	2
cis-1,2-Dichloroethene	ND	2
trans-1,2-Dichloroethene	ND	2
1,2-Dichloropropane	ND	2
cis-1,3-Dichloropropene	ND	2
trans-1,3-Dichloropropene	ND	2
Ethylbenzene	ND	2
2-Hexanone	ND	10
Methylene chloride	ND	5
4-Methyl-2-pentanone	ND	10
Styrene	ND	2
1,1,2,2-Tetrachloroethane	ND	2
Tetrachloroethene	ND	2
Toluene	ND	2
1,1,1-Trichloroethane	ND	2
1,1,2-Trichloroethane	ND	2
Trichloroethene	ND	2
Trichlorofluoromethane	ND	2
Vinyl acetate	ND	2
Vinyl chloride	ND	2
Total xylenes (total)	ND	2

a/NA = not analyzed; ND = not detected

The chromatograms of soil samples collected near the underground storage tank had chromatogram patterns that appeared to match the mineral spirit standard, indicating the possible presence of mineral spirits in the soil around the tank.

West Tank 7 Feet

Sample West Tank 7 Feet was collected on the west side of the tank at a depth of 7 feet bgs. TPPH were detected at a concentration of 610 mg/kg as a nongasoline mix (> C6). Total xylenes were detected at a concentration of 400 ug/kg. TEPH were detected at a concentration of 1,700 mg/kg as a nondiesel mix (< C11).

North Tank 7 Feet

Sample North Tank 7 Feet was collected on the north side of the tank at a depth of 7 feet bgs. TPPH were detected at a concentration of 420 mg/kg as a nongasoline mix (> C8). TEPH were detected at a concentration of 330 mg/kg as a nondiesel mix (C9-C12).

East Tank 7 Feet

Sample East Tank 7 Feet was collected on the east side of the tank at a depth of 7 feet bgs. TPPH were detected at a concentration of 740 mg/kg as a nongasoline mix (> C8). Total xylenes were detected at a concentration of 800 ug/kg. TEPH were detected at a concentration of 740 mg/kg as a nondiesel mix (< C12).

South Tank 7 Feet

Sample South Tank 7 Feet was collected on the south side of the tank at a depth of 7 feet bgs. TPPH were not detected at a reporting limit of 1 mg/kg. TEPH were detected at a concentration of 8.3 mg/kg as a nondiesel mix (C9-C14).

Pipeline 4 Feet

Sample Pipeline 4 Feet was collected on the east side of the tank beneath the piping network at a depth of 4 feet bgs. TPPH were detected at a concentration of 910 mg/kg as a nongasoline mix (> C6). Total xylenes were detected at a concentration of 600 ug/kg. TEPH were detected at a concentration of 550 mg/kg as a nondiesel mix (C9-C12).

Sump Area

Sample Sump Area was collected from a drain cleanout situated near a 2-foot by 2-foot sump located in the outdoor yard area at the Rockridge Furniture Shop. The sump is approximately 20 feet northeast of the underground tank. TPPH were detected at a concentration of 130 mg/kg as a nongasoline mix (> C6). Toluene was detected at a concentration of 1,100 ug/kg. Ethylbenzene was detected at a concentration of 1,400 ug/kg. Total xylenes were detected at a concentration of 14,000 ug/kg and trichloroethene was detected at a concentration of 460 ug/kg. TEPH were detected at a concentration of 10,000 mg/kg as a nondiesel mix (C9-C12).

Trench Water

Sample Trench Water was collected from an unknown liquid entering the excavation from beneath the adjacent building to the north. TPPH were detected at a concentration of 24,000 µg/l as a nongasoline mix (> C8). Total xylenes were detected at a concentration of 300 µg/l. TEPH were detected at a concentration of 12,000 µg/l as a nondiesel mix.

Rinsate

Sample Rinsate is from the rinsewater collected from inside the tank. TPPH were detected at a concentration of 23,000 µg/l as a non-gasoline mix (> C8). Ethylbenzene was detected at a concentration of 130 µg/l and xylenes were detected at a concentration of 380 µg/l. TEPH were detected at a concentration of 150,000 µg/l as a nondiesel mix (< C11).

Summary of Soil Investigation

The soil samples collected around the underground storage tank indicate that low levels of xylenes exist on the eastern and western portions of the tank (less than 800 ug/kg). Petroleum hydrocarbons were detected in concentrations less than 1,000 mg/kg in all samples except for the sample collected on the western portion of the tank. An evaluation of the chromatograms for the soil samples relative to the chromatograms of other fuel standards indicated that mineral spirits were the likely source of the petroleum hydrocarbons. A soil sample collected from the western portion of the tank contained TEPH

at a concentration of 1,700 mg/kg. The soils around the underground storage tank in general do not contain any VOCs except for very low levels on the eastern and western ends of the tank. There also appear to be low levels of mineral spirit compounds in the soil around the underground tank.

The soil sample collected from the sump area appears to contain compounds similar to gasoline. Toluene, ethylbenzene, and total xylenes were detected at concentrations less than 14 mg/kg. TEPH were also detected in the sump area at a concentration of 10,000 mg/kg.

Supplemental Soil and Groundwater Investigation

The additional investigation was undertaken to characterize further the extent of soil and groundwater contamination identified during previous investigations. The field work was performed by ESC on behalf of Grow Group and in accordance with requests from the RWQCB in a letter date October 25, 1991, to David B. Russell of Grow Group. ESC presented a "Revised Workplan for Supplemental Soil and Groundwater Investigation Former Boysen Paint Underground Storage Tank 41st Street Emeryville, California," dated July 14, 1992, and revised November 10, 1992 to the Alameda DEH. The November 10, 1992, work plan was designed to investigate likely sources of and the extent of soil contamination at the site as well as evaluate the need for further investigation or possible remediation. On May 13-24, 1993, ESC collected soil samples around the location of the tank and installed three groundwater monitoring wells. On June 10, 1993, groundwater monitoring was performed by ESC. Groundwater samples were collected from the monitoring wells located on the California Linen property (MW-1 and MW-2), the ONE property (MWLD-4), the former Dunne Quality Paint property (MWD-1 and MWD-2), the existing Grow Group monitoring well MWB-1, and the three newly installed monitoring wells MWB-2, MWB-3, and MWB-4 (Figure 6). Laboratory analyses were performed on groundwater samples collected from the nine existing wells and soil samples from three borings. The Health and Safety Plan for the field investigation work is included in this report as Appendix F.

Supplemental Soil Investigation Procedure

On May 24, 1993, soil samples were collected at 5-foot intervals from soils in the vadose zone and the capillary frimge from three borings around the underground storage tank area for lithologic identification and chemical analysis. Each of the samples collected was screened using an HNU photoionization detector (PID). Results of the PID screening are provided in the boring logs in Appendix G.

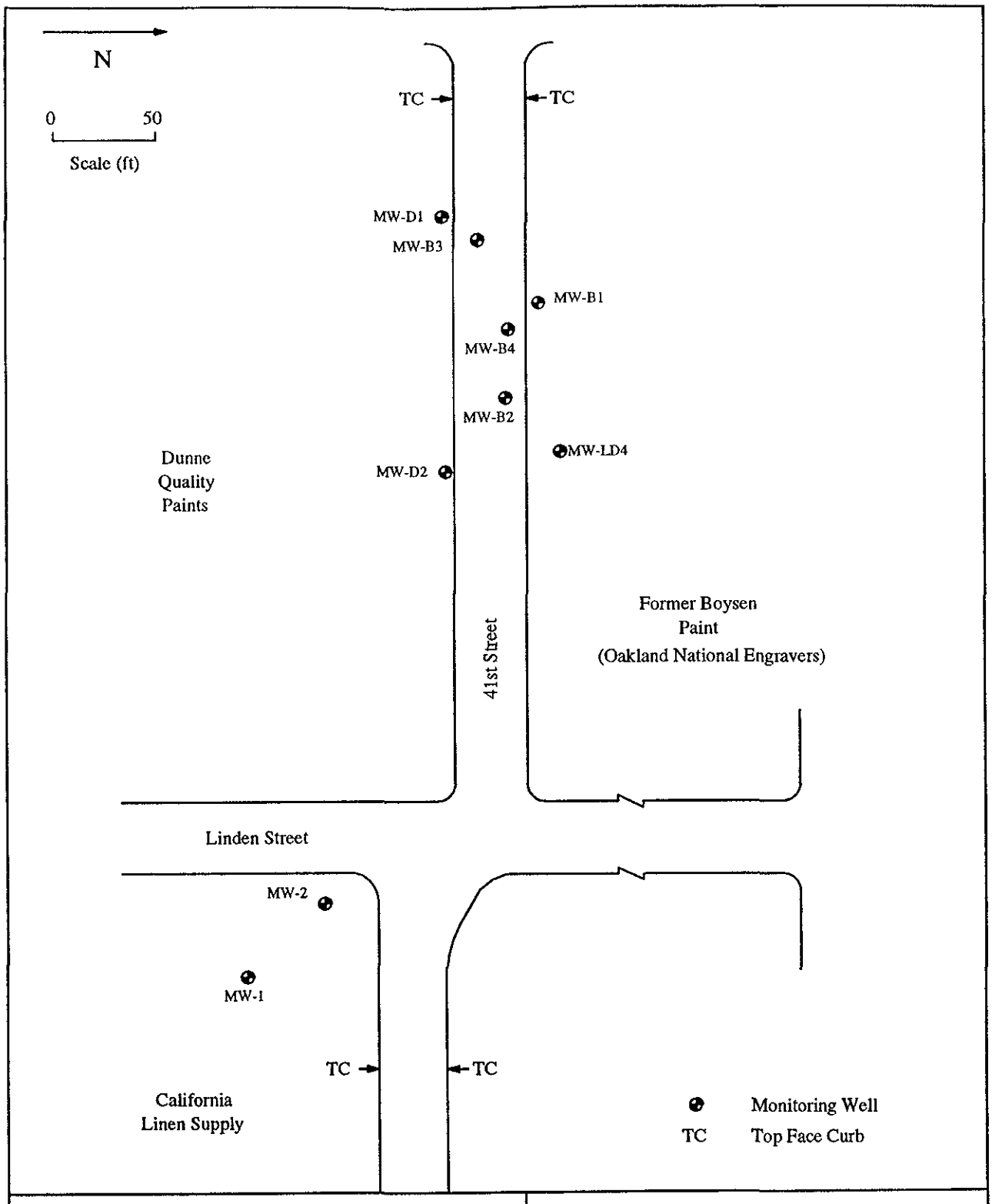

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Figure 6
Location of Monitoring Wells
Former Boysen Paint Company
Emeryville, California

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Bayland Drilling of Menlo Park, California, used a mobile CME-65 drill rig equipped with 8-inch outside diameter hollow stem augers to make the borings. Downhole equipment was decontaminated by steam cleaning after each borehole was completed. Split-spoon samplers were decontaminated with a nonphosphate detergent followed by a double rinse between each sample. The locations of the soil borings that were completed as groundwater monitoring wells are shown on Figure 6. MWB-2, MWB-3, and MWB-4 were sampled at 5-foot intervals starting at 2.5 bgs. Soil was sampled using an 18-inch split-spoon sampler and analyzed for TPPH and TEPH by EPA Method 8015, and for VOCs by EPA Method 8240. The cuttings generated by the auger were stored in roll-off bins. The soil cuttings along with the underground storage tank excavation spoils were profiled and subsequently disposed of as a California regulated waste at the CWM Kettleman Hills facility under manifest.

After completion of the drilling, the three borings were converted into 2-inch groundwater monitoring wells. The borings were logged using the Unified Soil Classification System. Boring logs, well construction detailss and well installation permits for the county of Alameda are provided in this report in Appendix G. All of the wells were installed with a minimum 5-foot seal of bentonite and neat cement, in accordance with Alameda County Water District groundwater monitoring guidelines. Locking caps were placed on the casings and traffic-rated steel covers were set slightly above grade to inhibit pooling.

To obtain groundwater level data based on a common elevation datum, the wells were surveyed by a California licensed land surveyor. California Linen Well MW-2 was used as the common known datum point for the survey. The map of the survey and the well coordinates are presented in Appendix H.

Results of Supplemental Soil Investigation

All soil samples analyzed contained no detectable levels of VOCs.

The following discussion of analytical results comments on the presence of TPPH and TEPH and any compounds appearing in the TPH range. In addition to reporting the TPPH and TEPH concentrations,

the TPH chromatogram pattern was also reported. To determine the presence of mineral spirits, a chromatogram study was conducted for the soil samples. The retention times and the patterns in the sample chromatograms were compared to the chromatograms of other fuel hydrocarbon standards. The chromatograms of soil samples from MWB-3 at 2.5 bgs and 10.0 feet bgs indicated hydrocarbons with no identifiable compound pattern. Soil samples collected for MWB-2 and MWB-4 had chromatogram patterns that appeared to match the mineral spirit standard.

Analytical results for soils are summarized in Table 2 and provided in Appendix I.

Boring MWB-2

Boring MWB-2 was drilled near the former ONE underground storage tank and MWLD-4 on 41st Street next to the former Boysen Paint Company. The sample collected at 3.5 feet bgs contained no detectable TPPH. TPPH were detected at 160 mg/kg as a nongasoline mix (> C6) at 5 feet bgs. At 10 feet bgs, TPPH were detected at 56 mg/kg as a nongasoline and gasoline mix.

TEPH were detected at 7.1 mg/kg as a nondiesel mix (C9-C12+ > C18) at a depth of 3.5 feet bgs. The sample collected at 5 feet bgs contained 24 mg/kg TEPH as a nondiesel mix (< C12 plus discrete peaks). TEPH were detected in the sample collected at 10 feet bgs at a concentration of 2.2 mg/kg as a nondiesel mix (< C12 plus discrete peaks).

Boring MWB-3

Boring MWB-3 was drilled downgradient from the former ONE underground storage tank and between the former Dunne Quality Paint tanks on 41st Street. The sample collected at 2.5 feet bgs contained TPPH at a concentration of 7.1 mg/kg as a nongasoline mix (> C8). TPPH were not detected in the sample collected at 5 feet bgs. TPPH were detected in the sample collected at 10 feet bgs at a concentration of 840 mg/kg as a nongasoline mix (> C8).

TEPH were not detected in the samples collected at 2.5 feet and 5 feet bgs. TEPH were detected in the sample collected at 10 feet bgs at a concentration of 220 mg/kg as a nondiesel mix (< C12).

Table 2

Soil Sampling Results
Former Grow Group Facility
Emeryville, California
Samples Taken May 24, 1993 (ug/kg) (a)

Analyte	S-3.5 Feet-MWB2		S-5 Feet-MWB2	
	Results	Detection limit	Results	Detection Limit
Total Purgable Hydrocarbons (mg/kg)	ND	1.0	160	20
Total Extractable Hydrocarbons (mg/kg)	7.1	1.0	24	1.0
VOCs				
Acetone	ND	500	ND	830
Benzene	ND	100	ND	170
Bromodichloromethane	ND	100	ND	170
Bromoform	ND	100	ND	170
Bromomethane	ND	100	ND	170
2-butanone	ND	500	ND	830
Carbon Disulfide	ND	100	ND	170
Carbon Tetrachloride	ND	100	ND	170
Chlorobenzene	ND	100	ND	170
Chloroethane	ND	100	ND	170
2-Chloroethyl vinyl ether	ND	500	ND	830
Chloroform	ND	100	ND	170
Chloromethane	ND	100	ND	170
Dibromochloromethane	ND	100	ND	170
1,1-dichloroethane	ND	100	ND	170
1,2-dichloroethane	ND	100	ND	170
1,1-dichloroethene	ND	100	ND	170
Cis-1,2-dichloroethene	ND	100	ND	170
Trans-1,2-dichloroethene	ND	100	ND	170
1,2-dichloropropane	ND	100	ND	170
cis-1,3-dichloropropene	ND	100	ND	170
Trans-1,3-dichloropropene	ND	100	ND	170
Ethylbenzene	ND	100	ND	170
2-hexanone	ND	500	ND	830
Methylene Chloride	ND	250	ND	420
4-methyl-2-pentanone	ND	500	ND	830
Styrene	ND	100	ND	170
1,1,2,2-tetrachloroethane	ND	100	ND	170
Tetrachloroethene	ND	100	ND	170
Toluene	ND	100	ND	170
1,1,1-trichloroethane	ND	100	ND	170
1,1,2-trichloroethane	ND	100	ND	170
Trichloroethene	ND	100	ND	170
Trichlorofluoromethane	ND	100	ND	170
Vinyl Acetate	ND	100	ND	170
Vinyl Chloride	ND	100	ND	170
Total Xylenes	ND	100	ND	170

Table 2 (continued)

Soil Sampling Results
Former Grow Group Facility
Emeryville, California
Samples Taken May 24, 1993 (ug/kg) (a)

Analyte	S-10 Feet-MWB2		S-2.5 Feet-MWB3	
	Results	Detection Limit	Results	Detection Limit
Total Purgable Hydrocarbons (mg/kg)	56	2.5	7.1	1.0
Total Extractable Hydrocarbons (mg/kg)	2.2	1.0	ND	1.0
VOCs				
Acetone	ND	500	ND	500
Benzene	ND	100	ND	100
Bromodichloromethane	ND	100	ND	100
Bromoform	ND	100	ND	100
Bromomethane	ND	100	ND	100
2-butanone	ND	500	ND	500
Carbon Disulfide	ND	100	ND	100
Carbon Tetrachloride	ND	100	ND	100
Chlorobenzene	ND	100	ND	100
Chloroethane	ND	100	ND	100
2-Chloroethyl vinyl ether	ND	500	ND	500
Chloroform	ND	100	ND	100
Chloromethane	ND	100	ND	100
Dibromochloromethane	ND	100	ND	100
1,1-dichloroethane	ND	100	ND	100
1,2-dichloroethane	ND	100	ND	100
1,1-dichloroethene	ND	100	ND	100
Cis-1,2-dichloroethene	ND	100	ND	100
Trans-1,2-dichloroethene	ND	100	ND	100
1,2-dichloropropane	ND	100	ND	100
cis-1,3-dichloropropene	ND	100	ND	100
Trans-1,3-dichloropropene	ND	100	ND	100
Ethylbenzene	ND	100	ND	100
2-hexanone	ND	500	ND	500
Methylene Chloride	ND	250	ND	250
4-methyl-2-pentanone	ND	500	ND	500
Styrene	ND	100	ND	100
1,1,2,2-tetrachloroethane	ND	100	ND	100
Tetrachloroethene	ND	100	ND	100
Toluene	ND	100	ND	100
1,1,1-trichloroethane	ND	100	ND	100
1,1,2-trichloroethane	ND	100	ND	100
Trichloroethene	ND	100	ND	100
Trichlorofluoromethane	ND	100	ND	100
Vinyl Acetate	ND	100	ND	100
Vinyl Chloride	ND	100	ND	100
Total Xylenes	ND	100	ND	100

Table 2 (continued)

Soil Sampling Results
Former Grow Group Facility
Emeryville, California
Samples Taken May 24, 1993 (ug/kg) (a)

Analyte	S-5 Feet-MWB3		S-10 Feet-MWB3	
	Results	Detection Limit	Results	Detection Limit
Total Purgable Hydrocarbons (mg/kg)	ND	1.0	840	100
Total Extractable Hydrocarbons (mg/kg)	ND	1.0	220	10
VOCs				
Acetone	ND	5,000	ND	5,000
Benzene	ND	1,000	ND	1,000
Bromodichloromethane	ND	1,000	ND	1,000
Bromoform	ND	1,000	ND	1,000
Bromomethane	ND	1,000	ND	1,000
2-butanone	ND	5,000	ND	5,000
Carbon Disulfide	ND	1,000	ND	1,000
Carbon Tetrachloride	ND	1,000	ND	1,000
Chlorobenzene	ND	1,000	ND	1,000
Chloroethane	ND	1,000	ND	1,000
2-Chloroethyl vinyl ether	ND	5,000	ND	5,000
Chloroform	ND	1,000	ND	1,000
Chloromethane	ND	1,000	ND	1,000
Dibromochloromethane	ND	1,000	ND	1,000
1,1-dichloroethane	ND	1,000	ND	1,000
1,2-dichloroethane	ND	1,000	ND	1,000
1,1-dichloroethene	ND	1,000	ND	1,000
Cis-1,2-dichloroethene	ND	1,000	ND	1,000
Trans-1,2-dichloroethene	ND	1,000	ND	1,000
1,2-dichloropropane	ND	1,000	ND	1,000
cis-1,3-dichloropropene	ND	1,000	ND	1,000
Trans-1,3-dichloropropene	ND	1,000	ND	1,000
Ethylbenzene	ND	1,000	ND	1,000
2-hexanone	ND	5,000	ND	5,000
Methylene Chloride	ND	2,500	ND	2,500
4-methyl-2-pentanone	ND	5,000	ND	5,000
Styrene	ND	1,000	ND	1,000
1,1,2,2-tetrachloroethane	ND	1,000	ND	1,000
Tetrachloroethene	ND	1,000	ND	1,000
Toluene	ND	1,000	ND	1,000
1,1,1-trichloroethane	ND	1,000	ND	1,000
1,1,2-trichloroethane	ND	1,000	ND	1,000
Trichloroethene	ND	1,000	ND	1,000
Trichlorofluoromethane	ND	1,000	ND	1,000
Vinyl Acetate	ND	1,000	ND	1,000
Vinyl Chloride	ND	1,000	ND	1,000
Total Xylenes	ND	1,000	ND	1,000

Table 2 (continued)

Soil Sampling Results
Former Grow Group Facility
Emeryville, California
Samples Taken May 24, 1993 (ug/kg) (a)

Analyte	S-10 Feet-MWB3 Duplicate		S-2.5-MWB4	
	Results	Detection Limit	Results	Detection Limit
Total Purgable Hydrocarbons (mg/kg)	1,200	100	2	1.0
Total Extractable Hydrocarbons (mg/kg)	110	10	5.4	1.0
VOCs				
Acetone	ND	5,000	ND	500
Benzene	ND	1,000	ND	100
Bromodichloromethane	ND	1,000	ND	100
Bromoform	ND	1,000	ND	100
Bromomethane	ND	1,000	ND	100
2-butanone	ND	5,000	ND	500
Carbon Disulfide	ND	1,000	ND	100
Carbon Tetrachloride	ND	1,000	ND	100
Chlorobenzene	ND	1,000	ND	100
Chloroethane	ND	1,000	ND	100
2-Chloroethyl vinyl ether	ND	5,000	ND	500
Chloroform	ND	1,000	ND	100
Chloromethane	ND	1,000	ND	100
Dibromochloromethane	ND	1,000	ND	100
1,1-dichloroethane	ND	1,000	ND	100
1,2-dichloroethane	ND	1,000	ND	100
1,1-dichloroethene	ND	1,000	ND	100
Cis-1,2-dichloroethene	ND	1,000	ND	100
Trans-1,2-dichloroethene	ND	1,000	ND	100
1,2-dichloropropane	ND	1,000	ND	100
cis-1,3-dichloropropene	ND	1,000	ND	100
Trans-1,3-dichloropropene	ND	1,000	ND	100
Ethylbenzene	ND	1,000	ND	100
2-hexanone	ND	5,000	ND	500
Methylene Chloride	ND	2,500	ND	250
4-methyl-2-pentanone	ND	5,000	ND	500
Styrene	ND	1,000	ND	100
1,1,2,2-tetrachloroethane	ND	1,000	ND	100
Tetrachloroethene	ND	1,000	ND	100
Toluene	ND	1,000	ND	100
1,1,1-trichloroethane	ND	1,000	ND	100
1,1,2-trichloroethane	ND	1,000	ND	100
Trichloroethene	ND	1,000	ND	100
Trichlorofluoromethane	ND	1,000	ND	100
Vinyl Acetate	ND	1,000	ND	100
Vinyl Chloride	ND	1,000	ND	100
Total Xylenes	ND	1,000	ND	100

Table 2 (continued)

Soil Sampling Results
Former Grow Group Facility
Emeryville, California
Samples Taken May 24, 1993 (ug/kg) (a)

Analyte	S-5 Feet-MWB4		S-10 Feet-MWB4	
	Results	Detection Limit	Results	Detection Limit
Total Purgable Hydrocarbons (mg/kg)	120	100	310	20
Total Extractable Hydrocarbons (mg/kg)	23	5.0	9.1	1.0
VOCs				
Acetone	ND	1,300	ND	1,000
Benzene	ND	250	ND	200
Bromodichloromethane	ND	250	ND	200
Bromoform	ND	250	ND	200
Bromomethane	ND	250	ND	200
2-butanone	ND	1,300	ND	1,000
Carbon Disulfide	ND	250	ND	200
Carbon Tetrachloride	ND	250	ND	200
Chlorobenzene	ND	250	ND	200
Chloroethane	ND	250	ND	200
2-Chloroethyl vinyl ether	ND	1,300	ND	1,000
Chloroform	ND	250	ND	200
Chloromethane	ND	250	ND	200
Dibromochloromethane	ND	250	ND	200
1,1-dichloroethane	ND	250	ND	200
1,2-dichloroethane	ND	250	ND	200
1,1-dichloroethene	ND	250	ND	200
Cis-1,2-dichloroethene	ND	250	ND	200
Trans-1,2-dichloroethene	ND	250	ND	200
1,2-dichloropropane	ND	250	ND	200
cis-1,3-dichloropropene	ND	250	ND	200
Trans-1,3-dichloropropene	ND	250	ND	200
Ethylbenzene	ND	250	ND	200
2-hexanone	ND	1,300	ND	1,000
Methylene Chloride	ND	630	ND	500
4-methyl-2-pentanone	ND	1,300	ND	1,000
Styrene	ND	250	ND	200
1,1,2,2-tetrachloroethane	ND	250	ND	200
Tetrachloroethene	ND	250	ND	200
Toluene	ND	250	ND	200
1,1,1-trichloroethane	ND	250	ND	200
1,1,2-trichloroethane	ND	250	ND	200
Trichloroethene	ND	250	ND	200
Trichlorofluoromethane	ND	250	ND	200
Vinyl Acetate	ND	250	ND	200
Vinyl Chloride	ND	250	ND	200
Total Xylenes	ND	250	ND	200

a/ ND = Not Detected

Boring MWB-4

Boring MWB-4 was drilled south of the former ONE underground storage tank and between the former Dunne Quality Paint tanks on 41st Street. TPPH were detected in the sample collected at 2.5 feet bgs at a concentration of 2 mg/kg as a nongasoline mix (> C8) and at 5 feet bgs at a concentration of 120 mg/kg as a nongasoline mix (> C6). The sample collected at 10 feet bgs contained TPPH at a concentration of 310 mg/kg as a nongasoline mix (> C6).

TEPH were detected in samples collected at 2.5 feet bgs at a concentration of 5.4 mg/kg as a nondiesel mix (< C12) and at 5 feet bgs at a concentration of 23 mg/kg as a nondiesel mix (< C12). The sample collected at 10 feet bgs contained TEPH at a concentration of 9.1 mg/kg as a nondiesel mix (< C12).

Summary of Supplemental Soil Investigation

TPPH and TEPH were detected at low levels (less than 310 mg/kg) in samples from two soil borings located on 41st street (MWB-2 and MWB-4). The highest concentration of TPH was detected in the boring located closest to the former Dunne Quality Paint former tanks (MWB-3, 1,200 mg/kg at 10 feet bgs). The former Dunne Quality Paint former underground storage tanks contained paint thinner. In general, the soil samples collected in these borings indicate that mineral spirits or paint thinner compounds are present in soils south of the Boysen underground storage tanks.

Supplemental Groundwater Investigation Procedures

Groundwater sampling was performed on June 10, 1993. Samples were collected from monitoring wells located on the California Linen property (MW-1 and MW-2), ONE property (MWLD-4), the former Dunne Quality Paint property (MWD-1 and MWD-2), the existing Grow Group monitoring well MWB-1, and the three newly installed monitoring wells MWB-2, MWB-3, and MWB-4. All wells were purged of at least three well casing volumes before a sample was collected. Well sampling logs are provided in

Appendix J. Purged water was collected in 55-gallon Department of Transportation-DOT approved drums and stored in a secure area pending disposition based on the laboratory results.

The wells were purged with decontaminated bailers and water samples were collected with disposable bailers. Samples to be analyzed for VOCs were collected in volatile organic analysis vials without headspace to avoid volatilization. Sample containers were labeled and placed on ice immediately after collection. Strict chain-of-custody procedures were followed. The groundwater samples were analyzed for VOCs by EPA Method 8240 and for TEPH and TPPH by EPA Method 8015 at Sequoia Analytical of Redwood City, California, a California State Certified laboratory. Analytical results for groundwater are summarized in Table 3 and provided in Appendix K.

Results of Supplemental Groundwater Investigation

To determine the presence of mineral spirits, a chromatogram study was conducted for the groundwater samples. The retention times and patterns in the sample chromatograms were compared to the chromatograms of other fuel hydrocarbon standards.

A chromatogram of the groundwater sample for MW-2 indicated no hydrocarbon pattern. Groundwater samples collected for MW-1, MWLD-4, MWB-1, MWB-2, MWB-3, MWB-4, MWD-1, and MWD-2 had chromatogram patterns that appeared to match the mineral spirit standard, indicating the possible presence of mineral spirits in the groundwater around each of these wells.

Monitoring Well MW-1

MW-1 is located upgradient of the Boysen tank to the east on the California Linen property (Figure 7). The sample from MW-1 contained benzene at 6,700 µg/l, which is above the state maximum contaminant level (MCL) of 1 µg/l. Ethylbenzene was detected at 1,800 µg/l, above the state MCL of 680 µg/l. Total xylenes were detected at 6,500 µg/l, above the state MCL of 1,750 µg/l. Toluene was detected at 1,600 µg/l, above the state action level of 100 µg/l. TPPH were detected in well MW-1 at 38,000 µg/l as gasoline. TEPH were detected in well MW-1 at 11,000 µg/l as a nondiesel mix < C13.

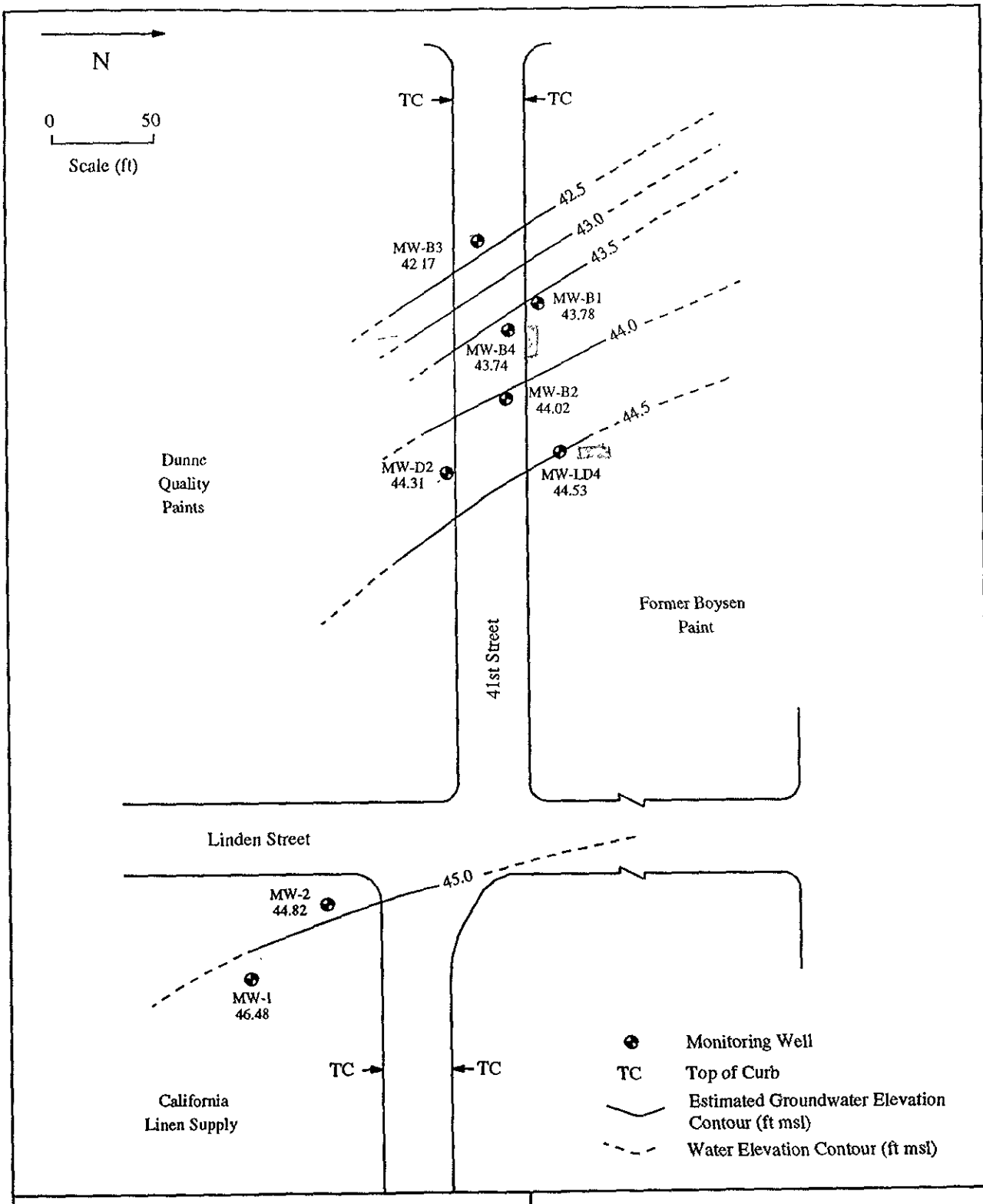

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Figure 7
Groundwater Elevation Contours - June 10, 1993
Former Boyen Paint Company
Emeryville, California

I:\LOTUS\GROW\GRWCONT1

Table 3

Groundwater Sampling Results
Former Grow Group Facility
Emeryville, California
June 10, 1993 (ug/l) (a)

	MWB-1		MWB-2	
Analyte	Results	Detection Limit	Results	Detection Limit
Total Purgeable Hydrocarbons	57,000	2,500	1,400	500
Total Extractable Hydrocarbons	27,000	2,500	3,800	250
VOCs				
Acetone	ND	130	ND	25
Benzene	ND	26	ND	5
Bromodichloromethane	ND	26	ND	5
Bromoform	ND	26	ND	5
Bromomethane	ND	26	ND	5
2-Butanone	ND	130	ND	25
Carbon Disulfide	ND	26	ND	5
Carbon Tetrachloride	ND	26	ND	5
Chlorobenzene	ND	26	ND	5
Chloroethane	ND	26	ND	5
2-Chloroethyl Vinyl Ether	ND	130	ND	25
Chloroform	ND	26	ND	5
Chloromethane	ND	26	ND	5
Dibromochloromethane	ND	26	ND	5
1,1-dichloroethane	ND	26	ND	5
1,2-dichloroethane	ND	26	ND	5
1,1-dichloroethene	ND	26	ND	5
cis-1,2-dichloroethene	ND	26	ND	5
trans-1,2-dichloroethene	ND	26	ND	5
1,2-dichloropropane	ND	26	ND	5
Cis-1,3-dichloropropene	ND	26	ND	5
Trans-1,3-dichloropropene	ND	26	ND	5
Ethylbenzene	ND	26	ND	5
2-hexanone	ND	130	ND	25
Methylene Chloride	ND	65	ND	13
4-methyl-2-pentanone	ND	130	ND	25
Styrene	ND	26	ND	5
1,1,2,2-tetrachloroethane	ND	26	ND	5
Tetrachloroethene	ND	26	ND	5
Toluene	ND	26	ND	5
1,1,1-trichloroethane	ND	26	ND	5
1,1,2-trichloroethane	ND	26	ND	5
Trichloroethene	ND	26	ND	5
Trichlorofluoromethane	ND	26	ND	5
Vinyl Acetate	ND	26	ND	5
Vinyl Chloride	ND	26	ND	5
Total Xylenes	ND	26	ND	5

Table 3 (continued)

Groundwater Sampling Results
Former Grow Group Facility
Emeryville, California
June 10, 1993 (ug/l) (a)

	MWB-3		MWB-4	
Analyte	Results	Detection Limit	Results	Detection Limit
Total Purgeable Hydrocarbons	510	200	36,000	1,000
Total Extractable Hydrocarbons	1,700	250	36,000	1,000
VOCs				
Acetone				
Benzene	ND	10	ND	71
Bromodichloromethane	ND	2	ND	14
Bromoform	ND	2	ND	14
Bromomethane	ND	2	ND	14
2-Butanone	ND	2	ND	14
Carbon Disulfide	ND	10	ND	71
Carbon Tetrachloride	ND	2	ND	14
Chlorobenzene	ND	2	ND	14
Chloroethane	ND	2	ND	14
2-Chloroethyl Vinyl Ether	ND	2	ND	14
Chloroform	ND	10	ND	71
Chloromethane	ND	2	ND	14
Dibromochloromethane	ND	2	ND	14
1,1-dichloroethane	ND	2	ND	14
1,2-dichloroethane	ND	2	ND	14
1,1-dichloroethene	ND	2	ND	14
cis-1,2-dichloroethene	ND	2	ND	14
trans-1,2-dichloroethene	ND	2	ND	14
1,2-dichloropropane	ND	2	ND	14
Cis-1,3-dichloropropene	ND	2	ND	14
Trans-1,3-dichloropropene	ND	2	ND	14
Ethylbenzene	ND	2	ND	14
2-hexanone	ND	2	ND	14
Methylene Chloride	ND	10	ND	71
4-methyl-2-pentanone	ND	5	ND	36
Styrene	ND	10	ND	71
1,1,2,2-tetrachloroethane	ND	2	ND	14
Tetrachloroethene	ND	2	ND	14
Toluene	ND	2	ND	14
1,1,1-trichloroethane	ND	2	ND	14
1,1,2-trichloroethane	ND	2	ND	14
Trichloroethene	ND	2	ND	14
Trichlorofluoromethane	ND	2	ND	14
Vinyl Acetate	ND	2	ND	14
Vinyl Chloride	ND	2	ND	14
Total Xylenes	ND	2	ND	14
total xylenes	ND	2	ND	14

Table 3 (continued)

Groundwater Sampling Results
Former Grow Group Facility
Emeryville, California
June 10, 1993 (ug/l) (a)

Analyte	MWD-1 Results	MWD-1 Detection Limit	MWD-2 Results	MWD-2 Detection Limit
Total Purgeable Hydrocarbons	230	50	6,200	5,000
Total Extractable Hydrocarbons	220	50	9,100	1,000
VOCs				
Acetone	ND	10	ND	17
Benzene	ND	2	ND	3.3
Bromodichloromethane	ND	2	ND	3.3
Bromoform	ND	2	ND	3.3
Bromomethane	ND	2	ND	3.3
2-Butanone	ND	10	ND	17
Carbon Disulfide	ND	2	ND	3.3
Carbon Tetrachloride	ND	2	ND	3.3
Chlorobenzene	ND	2	ND	3.3
Chloroethane	ND	2	ND	3.3
2-Chloroethyl Vinyl Ether	ND	10	ND	17
Chloroform	ND	2	ND	3.3
Chloromethane	ND	2	ND	3.3
Dibromochloromethane	ND	2	ND	3.3
1,1-dichloroethane	ND	2	ND	3.3
1,2-dichloroethane	ND	2	ND	3.3
1,1-dichloroethene	ND	2	ND	3.3
cis-1,2-dichloroethene	ND	2	ND	3.3
trans-1,2-dichloroethene	ND	2	ND	3.3
1,2-dichloropropane	ND	2	ND	3.3
Cis-1,3-dichloropropene	ND	2	ND	3.3
Trans-1,3-dichloropropene	ND	2	ND	3.3
Ethylbenzene	ND	2	ND	3.3
2-hexanone	ND	10	ND	17
Methylene Chloride	ND	5	ND	8.3
4-methyl-2-pentanone	ND	10	ND	17
Styrene	ND	2	ND	3.3
1,1,2,2-tetrachloroethane	ND	2	ND	3.3
Tetrachloroethene	ND	2	ND	3.3
Toluene	ND	2	ND	3.3
1,1,1-trichloroethane	ND	2	ND	3.3
1,1,2-trichloroethane	ND	2	ND	3.3
Trichloroethene	ND	2	ND	3.3
Trichlorofluoromethane	ND	2	ND	3.3
Vinyl Acetate	ND	2	ND	3.3
Vinyl Chloride	ND	2	ND	3.3
Total Xylenes	ND	2	ND	3.3
total xylenes				

Table 3 (continued)

Groundwater Sampling Results
Former Grow Group Facility
Emeryville, California
June 10, 1993 (ug/l) (a)

Analyte	MW-1 Results	MW-1 Detection Limit	MW-2 Results	MW-2 Detection Limit
Total Purgeable Hydrocarbons	38,000	5,000	N.D.	50
Total Extractable Hydrocarbons	11,000	500	N.D.	50
VOCs				
Acetone	ND	400	ND	10
Benzene	6,700	80	ND	2
Bromodichloromethane	ND	80	ND	2
Bromoform	ND	80	ND	2
Bromomethane	ND	80	ND	2
2-Butanone	ND	400	ND	10
Carbon Disulfide	ND	80	ND	2
Carbon Tetrachloride	ND	80	ND	2
Chlorobenzene	ND	80	ND	2
Chloroethane	ND	80	ND	2
2-Chloroethyl Vinyl Ether	ND	400	ND	10
Chloroform	ND	80	ND	2
Chloromethane	ND	80	ND	2
Dibromochloromethane	ND	80	ND	2
1,1-dichloroethane	ND	80	ND	2
1,2-dichloroethane	ND	80	ND	2
1,1-dichloroethene	ND	80	ND	2
cis-1,2-dichloroethene	ND	80	ND	2
trans-1,2-dichloroethene	ND	80	ND	2
1,2-dichloropropane	ND	80	ND	2
Cis-1,3-dichloropropene	ND	80	ND	2
Trans-1,3-dichloropropene	ND	80	ND	2
Ethylbenzene	1,600	80	ND	2
2-hexanone	ND	400	ND	10
Methylene Chloride	ND	200	ND	5
4-methyl-2-pentanone	ND	400	ND	10
Styrene	ND	80	ND	2
1,1,2,2-tetrachloroethane	ND	80	ND	2
Tetrachloroethene	ND	80	ND	2
Toluene	3,700	80	ND	2
1,1,1-trichloroethane	ND	80	ND	2
1,1,2-trichloroethane	ND	80	ND	2
Trichloroethene	ND	80	ND	2
Trichlorofluoromethane	ND	80	ND	2
Vinyl Acetate	ND	80	ND	2
Vinyl Chloride	ND	80	ND	2
Total Xylenes	6,500	80	ND	2
total xylenes				

Table 3 (continued)

Groundwater Sampling Results
Former Grow Group Facility
Emeryville, California
June 10, 1993 (ug/l) (a)

Analyte	LD-4 Results	LD-4 Reporting Limit	200 (b) Results	200 (b) Reporting Limit
Total Purgeable Hydrocarbons	1,100	500	14,000	1,000
Total Extractable Hydrocarbons	21,000	500	20,000	500
VOCs				
Acetone	ND	17	ND	10
Benzene	ND	3.3	ND	2
Bromodichloromethane	ND	3.3	ND	2
Bromoform	ND	3.3	ND	2
Bromomethane	ND	3.3	ND	2
2-Butanone	ND	17	ND	10
Carbon Disulfide	ND	3.3	ND	2
Carbon Tetrachloride	ND	3.3	ND	2
Chlorobenzene	ND	3.3	ND	2
Chloroethane	ND	3.3	ND	2
2-Chloroethyl Vinyl Ether	ND	17	ND	10
Chloroform	ND	3.3	ND	2
Chloromethane	ND	3.3	ND	2
Dibromochloromethane	ND	3.3	ND	2
1,1-dichloroethane	ND	3.3	ND	2
1,2-dichloroethane	ND	3.3	ND	2
1,1-dichloroethene	ND	3.3	ND	2
cis-1,2-dichloroethene	ND	3.3	ND	2
trans-1,2-dichloroethene	ND	3.3	ND	2
1,2-dichloropropane	ND	3.3	ND	2
Cis-1,3-dichloropropene	ND	3.3	ND	2
Trans-1,3-dichloropropene	ND	3.3	ND	2
Ethylbenzene	ND	3.3	ND	2
2-hexanone	ND	17	ND	10
Methylene Chloride	ND	8.3	ND	5
4-methyl-2-pentanone	ND	17	ND	10
Styrene	ND	3.3	ND	2
1,1,2,2-tetrachloroethane	ND	3.3	ND	2
Tetrachloroethene	ND	3.3	ND	2
Toluene	ND	3.3	ND	2
1,1,1-trichloroethane	ND	3.3	ND	2
1,1,2-trichloroethane	ND	3.3	ND	2
Trichloroethene	ND	3.3	ND	2
Trichlorofluoromethane	ND	3.3	ND	2
Vinyl Acetate	ND	3.3	ND	2
Vinyl Chloride	ND	3.3	ND	2
Total Xylenes	ND	3.3	ND	2

total xylenes

a/ ND = Not Detected.
b/ Duplicate of sample MWB-1

Monitoring Well MW-2

MW-2 is located upgradient from the former Boysen tank and west of well MW-1 on the California Linen property. The sample collected from MW-2 contained no VOCs at concentrations above the state MCLs. Benzene was not detected at a detection limit of 2.0 µg/l. Also, no TPPH and TEPH were detected.

Monitoring Well MWD-1

MWD-1 is located on the south side of 41st Street, downgradient from the former underground storage tanks on the former Dunne Quality Paint property. The sample collected from MWD-1 contained no VOC at concentrations above the state MCLs. Benzene was not detected at a detection limit of 2.0 µg/l. TPPH were detected in the monitoring well at a concentration of 230 µg/l as nongasoline (>C8). TEPH were detected in the monitoring well at a concentration of 220 µg/l as a nondiesel mix (<C15).

Monitoring Well MWD-2

MWD-2 is located on the south side of 41st Street upgradient of MWD-1 and the former underground storage tanks on the Dunne Quality Paint property. The sample collected from MWD-2 contained no VOCs at concentrations above the state MCLs. Benzene was not detected at a detection limit of 3.3 µg/l. TPPH were detected in the monitoring well at a concentration of 6,200 µg/l as nongasoline (>C8). TEPH were detected in the monitoring well at a concentration of 9,100 µg/l as nondiesel (<C12).

Monitoring Well MWLD-4

MWLD-4 is located on the north side of 41st Street, upgradient from the former underground storage tank on the ONE property. The sample collected from MWLD-4 contained no VOCs at concentrations above the state MCLs. Benzene was not detected at a detection limit of 3.3 µg/l. TPPH were detected at a concentration of 1,100 µg/l as nongasoline (>C8). TEPH were detected in the monitoring well at a concentration of 21,000 µg/l as nondiesel mix (<C14).

Monitoring Well MWB-1

MWB-1 is located adjacent to and generally downgradient of the former Boysen tank on the sidewalk next to the former Boysen Paint Company. The sample collected from MWB-1 contained no VOCs at concentrations above the state MCLs. Benzene was not detected at the detection limit of 26 µg/l.

TPPH were detected at a concentration of 57,000 µg/l as nongasoline (>C8). TEPH were detected in the monitoring well at a concentration of 27,000 µg/l as nondiesel mix (<C3).

Monitoring Well MWB-2

MWB-2 is located generally upgradient of the former Boysen tank. The sample collected from MWB-2 contained no VOCs at concentrations above the state MCLs. Benzene was not detected at a detection limit of 5 µg/l. TPPH were detected at 1,400 µg/l with nongasoline (>C8). TEPH were detected in the monitoring well at a concentration of 3,800 µg/l as a nondiesel mix.

Monitoring Well MWB-3

MWB-3 is located between the former Boysen tank and the former Dunne Quality Paint former tanks on 41st Street. The sample collected from MWB-3 contained no VOCs at concentrations above the state MCLs. Benzene was not detected at a detection limit of 5 µg/l. TPPH were detected at 510 µg/l as nongasoline (>C8). TEPH were detected in the monitoring well at a concentration of 1,700 µg/l as a nondiesel mix (<C13).

Monitoring Well MWB-4

MWB-4 is located south of the former Boysen tank and between the former Dunne Quality Paint tanks on 41st Street. The sample collected from MWB-4 contained no VOCs at concentrations above the state MCLs. Benzene was not detected at a detection limit of 14 µg/l. TPPH were detected at 36,000 µg/l with nongasoline (>C8). TEPH were detected in the monitoring well at a concentration of 36,000 µg/l as a nondiesel mix (<C14).

Summary of Supplemental Groundwater Investigation

The data collected from the nine local groundwater monitoring wells indicate that except in the vicinity of MW-1, there are no VOCs in the area. MW-1 contained very high levels of VOCs that appear to indicate the presence of a gasoline product. Levels as high as 6,700 µg/l of benzene were detected in MW-1.

Groundwater samples collected from the nine local monitoring wells contained TPPH and TEPH at concentrations up to 57,000 µg/l. Results from the supplemental groundwater investigation, indicate that an areawide groundwater quality problem exists.

Groundwater Gradient

Groundwater levels in the nine monitoring wells were measured on June 10, 1993, and again on July 8, 1993 (Table 4). Measurements are also documented on the well sampling logs (Appendix G).

Groundwater levels were measured using an electrically activated audible water level indicator, accurate to 0.01 inch. To avoid the possibility of introducing contamination from one well to another, after each well was sounded and the data were recorded, the instrument's tape and probe were decontaminated using a deionized water rinse.

Based on the June 10, 1993, and July 8, 1993, data the groundwater gradient and direction cannot be conclusively determined. Because the gradient is slight and the groundwater monitoring wells used for data collection are located linearly and very close to each other, it is difficult to accurately determine groundwater direction. However, it can be generally stated that the groundwater flows from east to west (Figure 7 and Figure 8).

Groundwater elevations ranged from 5.29 feet bgs to 9.24 feet bgs. Groundwater was first encountered at approximately 10 feet bgs and equalized to approximately 6 feet bgs in the wells, indicating that groundwater is contained in a confined or semiconfined aquifer. Information was obtained from site personnel at ONE and from correspondence from James D. Parker of Hunter Environmental Services, Inc., the former consultant for Dunne Quality Paint, to Rafat A. Shadid of Alameda County DEH dated May 26, 1989. This information indicates that MWLD-4, MWD-1, and MWD-2 were constructed directly in the excavations of the former ONE and former Dunne Quality Paint underground storage tank removals. The wells are screened within the non-native fill material used to backfill the excavations. As a result, the groundwater elevations and groundwater quality data from these wells are not likely to be representative

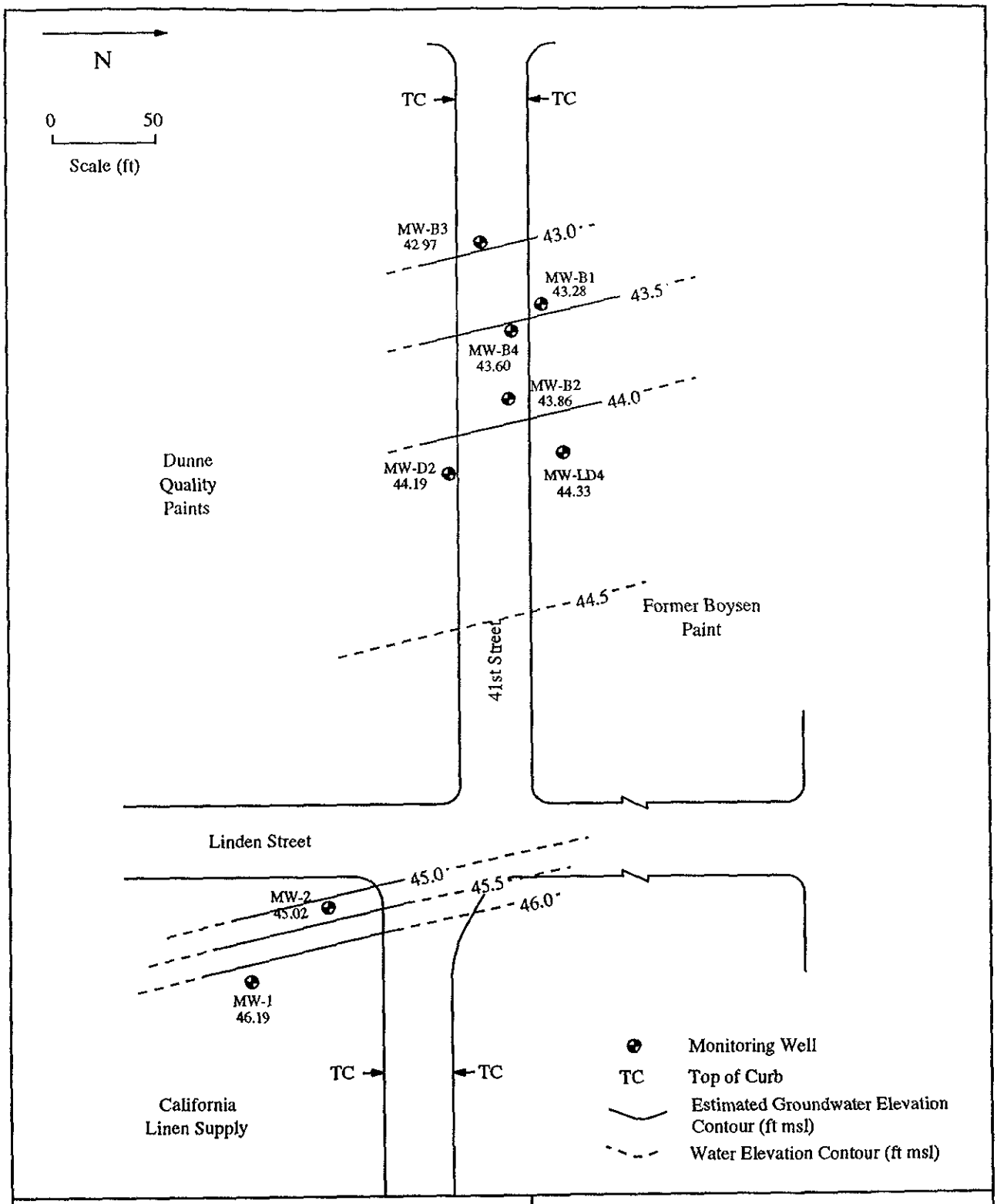

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Figure 8
Groundwater Elevation Contours - July 8, 1993
Former Boyen Paint Company
Emeryville, California

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Table 4

Groundwater Elevations at the
Grow Group Regional Study Area in
Emeryville, California
June 1993

Well No.	Date	Bottom of Well (ft)	Top of Casing Elevation (ft MSL)	Depth to Water (ft)	Groudwater Elevation (ft MSL)
MWB-1	June 10, 1993	19.88	49.92	6.14	43.78
MWB-1	July 8, 1993		49.92	6.64	43.28
MWB-2	June 10, 1993	23.35	50.77	6.75	44.02
MWB-2	July 8, 1993		50.77	6.91	43.86
MWB-3	June 10, 1993	20.88	49.02	6.85	42.17
MWB-3	July 8, 1993		49.02	6.05	42.97
MWB-4	June 10, 1993	21.50	49.74	6.00	43.74
MWB-4	July 8, 1993		49.74	6.14	43.60
MWD-1	June 10, 1993	12.50	49.35	5.29	44.06
MWD-1	July 8, 1993		49.35	5.67	43.68
MWD-2	June 10, 1993	12.55	50.56	6.25	44.31
MWD-2	July 8, 1993		50.56	6.37	44.19
MW-1	June 10, 1993	22.00	53.89	7.41	46.48
MW-1	July 8, 1993		53.89	7.70	46.19
MW-2	June 10, 1993	22.60	54.06	9.24	44.82
MW-2	July 8, 1993		54.06	9.04	45.02
LD-4	June 10, 1993	10.60	51.51	6.98	44.53
LD-4	July 8, 1993		51.51	7.18	44.33

of actual groundwater conditions in the surficial aquifer. Additionally, the many structures and building foundations and underground utilities in the area provide barriers or permeable channels that likely influences the natural direction of the near surface groundwater flow.

Quality Assurance and Quality Control

ESC's Quality Assurance Officer (QAO) is responsible for establishing data quality requirements and detection limits for the analyses. The QAO is responsible for ensuring that quality assurance goals are met during the investigation. The QAO serves as the overall quality control coordinator for sampling and analysis, and works closely with the contract analytical laboratory to facilitate the planned sampling and analytical activities. The QAO's overall responsibilities include, but are not limited to, sampling quality control, laboratory quality control, data processing quality control, data quality review, performance auditing, systems auditing, and overall quality assurance. The QAO specifies the protocol for duplicate samples, equipment blanks, and field blanks.

The laboratory reports and the QAO's report for the investigation are included in Appendix L.

Conclusions

Soils

Based on the VOC and TPH results obtained from the soil borings, contamination in the soils remaining in the underground storage tank area appears to be at relatively low concentrations and is localized. The concentrations are considered low enough not to constitute a threat or a continuing source that could affect groundwater.

TPH concentrations in the tank area are below 1,000 mg/kg except for the western portion of the tank, which has one sample at 1,700 mg/kg. There were no detectable VOC compounds in the soil located near the tank or in the perimeter soil borings (MWB-2, MWB-3, and MWB-4). Because the tank has been rendered inert and soils in the area are covered with concrete and asphalt, there is no direct exposure to the soils. Site remedial action is not suggested at this time.

The soil sampling data at the sump location within the furniture company indicate high concentrations of TPH and VOC compounds. It appears that a correlation exists between the constituents found near the tank and those found in the samples collected from the sump area. The sample of trench water emanating from beneath the building also contained relatively high concentrations of TPH. Further investigation, including source identification and delineation of the constituents is required to establish the nature of sources outside the tank area and outside the responsibility of Grow Group.

Groundwater

The groundwater sampling data indicate that area wide groundwater contamination exists. It appears that sources adjacent to the former Boysen tank (Dunne Quality Paint and Oakland National Engravers) are contributing to an area wide plume. However, because of the unconventional construction of MWD-1, MWD-2, and MWLD-4, it is difficult to determine the actual effects on groundwater that may have resulted from the former Dunne and ONE underground tanks. Additionally, MW-1 at California Linen exhibits high levels of VOCs and TPH in the groundwater.

The exact groundwater gradient in the area cannot be conclusively determined at this time. Because of the inappropriate construction of the noted monitoring wells in the area, the north-south component for groundwater direction is difficult to establish. A well survey of all other wells in the area and screen intervals should be conducted. If the survey finds additional wells that can be used for measuring water elevations, then these wells can be used to assist in determining the groundwater gradient.

As proposed in the "Revised Workplan for Supplemental Soil and Groundwater Investigation, Former Boysen Paint Underground Storage Tank 41st Street Emeryville, California" report submitted July 14, 1992, groundwater elevation measurements will be taken monthly for a minimum of 6 months. As stated in ESC's correspondence to Alameda DEH, dated April 21, 1993, groundwater monitoring wells MWB-1, MWB-2, MWB-3, and MWB-4 will be sampled for two quarters. Groundwater samples were collected on June 10, 1993, and will be collected again in September 1993. An evaluation of water quality and groundwater gradient data will be prepared following collection of these two quarters of data.

Appendix A - Site Photos

Photo 1: Discoloration of soil near pipeline.
41st Street, Emeryville, CA

Photo 2: Hole located in product line fitting.
41st Street, Emeryville, CA

Photo 3: Holes located in product line.
41st Street, Emeryville, CA

Appendix B - Hazardous Waste Manifests

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-94)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

CAC000891232037 33

3. Generator's Name and Mailing Address

Grow Group
P.O. Box 7600 Louisville, Ky. 40207

4. Generator's Phone (502) 897-9861

A. State Manifest Document Number 9929837

B. State Generator's ID

5. Transporter 1 Company Name | 6. US EPA ID Number

Erickson, Inc. | CAD009463992

C. State Transporter's ID 203277

D. Transporter's Phone (510) 235-1393

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CEMI Kettleman Hills Facility
35251 Old Sky Line Rd.
Kettleman City, Ca. 93239 | CAT000646117

G. State Facility's ID

H. Facility's Phone (209) 386-9711

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Numbers
a. Non-RCRA Hazardous Waste Solids (Hydrocarbon Contaminated Soil)	001	CM	020	Y	State 331 EPA/Other None
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above
a. b.
c. d.

15. Special Handling Instructions and Additional Information

ERG NONE 24 Hr. Contact. (408) 453-6100
Wear Goggles and Glasses

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
Robert Bedkowski agent for Henry Jones	R. Bedkowski agent for Henry Jones	06	10	93

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
CHARLEY ELMORE	Charley Elmore	06	10	93

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (12/91)
EPA 8700—22

Yellow: GENERATOR RETAINS

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-94)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

C A C 0 0 0 8 9 1 2 3 2 0 3 7 3 7 | 1 of 1

3. Generator's Name and Mailing Address
Grow Group
P.O. Box 7600. Louisville, Ky. 40207
4. Generator's Phone (502 897-9861

A. State Manifest Document Number: 922037737
B. State Generator's ID:
C. State Transporter's ID: 402976
D. Transporter's Phone: (510) 235-1993
E. State Transporter's ID:
F. Transporter's Phone:
G. State Facility's ID:
H. Facility's Phone: (209) 386-9711

5. Transporter 1 Company Name | 6. US EPA ID Number
Erickson, Inc. | C A D 0 0 0 4 6 6 3 9 2
7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number
CWMI Kettleman Hills Facility
35251 Old Sky Line Rd.
Kettleman City, Ca. 93239 | C A T 0 0 0 6 4 6 1 1 7

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. Non-RCRA Hazardous Waste Solids (Hydrocarbon Contaminated Soil)	001	CM	15Y		State: CA11 EPA/Other: NONE
b.					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

J. Additional Descriptions for Materials Listed Above
Lic. Profile # 304570
WO # 006

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information
ERG NONE 24Hr. Contact (408)453-6100
Wear Goggles and Glasses.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.

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GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
Robert B. Hewitt agent for Henry Jacobs	agent for Henry Jacobs	10	16	93

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
PAUL JACOBO	Paul Jacobo	10	16	93

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (12/91)
EPA 8700—22

Yellow: GENERATOR RETAINS

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-94)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000891232 | Manifest Document No. 81482 | 2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address (Boysen Paint com)
Panam Building
200 Park ave new York, NY 10166

4. Generator's Phone (212 599 4402)

5. Transporter 1 Company Name: Erickson, Inc. | 6. US EPA ID Number: CAD009466392

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address
Gibson Oil/Pilot Petroleum
475 Sea Port Blvd.
Redwood City, Ca. 94504

10. US EPA ID Number: CAD043260702

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	State / EPA/Other Waste Numbers
a. RQ Hazardous Waste Liquids NOS (PCB's) NA9189 D018	001	TT	600	G	State: [illegible] EPA/Other: D018
b. Grow Group, Inc. P.O. Box 7600 4000 Dupont Circle Louisville, Kentucky 40207 (502) 897-9861 att: Henry W. Jones					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

J. Additional Descriptions for Materials Listed Above: Hydrocarbon/Mixture with Water (99% Water, 1% Hydrocarbons)

K. Handling Codes for Wastes Listed Above: a. [illegible] b. [illegible] c. [illegible] d. [illegible]

15. Special Handling Instructions and Additional Information
Gibson Oil Waste Stream Profile # 1000 | TSC 31
24 Hr. Contact Mark Armstrong | 24 Hr. Phone# 408 453 6100

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
[illegible]		05	13	93

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Gary Adams	[signature]	05	13	93

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (12/91)
EPA 8700—22

Yellow. GENERATOR RETAINS

GENERATOR

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802 WITHIN CALIFORNIA, 1-800-[illegible]-755

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-94)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAD009891232 — Manifest Document No. 81453 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Baysen Paint Company (Penn am Building) Parker 200 Park ave new York, NY 10166
4. Generator's Phone (212) 599-4400
A. State Manifest Document Number: 922093171
B. State Generator's ID:
C. State Transporter's ID: 30915
D. Transporter's Phone: (510) 235-1893
E. State Transporter's ID:
F. Transporter's Phone:
G. State Facility's ID:
H. Facility's Phone: (415) 368-3511

5. Transporter 1 Company Name: Erickson, Inc. — 6. US EPA ID Number: CAD009466392
7. Transporter 2 Company Name — 8. US EPA ID Number:
9. Designated Facility Name and Site Address: Gibson Oil/Pilot Petroleum, 475 Sea Port Blvd., Redwood City, Ca. 94604 — 10. US EPA ID Number: CAD041326072

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Num.
a. RQ Hazardous Waste Liquids NOS ORM E NA9189 D018	001	TT	650	G	State 223 EPA/Other D018
b. Grow Group, Inc. P.O. Box 7600 4000 Dupont Circle Louisville, Kentucky 40207 (502) 897-9861 ATT: HENRY W. JONES					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: Hydrocarbon Mixture With Water (99% water, 1% hydrocarbons)

K. Handling Codes for Wastes Listed Above: a. b. c. d.

15. Special Handling Instructions and Additional Information
Gibson Oil Waste Stream Profile # 10001 ERG 31
24 Hr. Contact Mark Armstrong 24 Hr. Phone# 408 453 6100

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.

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GENERATOR — Printed/Typed Name: Eric Walkowski agent for Henry Jones — Signature — Month 05 Day 12 Year 93

TRANSPORTER
17. Transporter 1 Acknowledgement of Receipt of Materials — Printed/Typed Name: Garry Adams — Signature — Month 05 Day 12 Year 93
18. Transporter 2 Acknowledgement of Receipt of Materials — Printed/Typed Name — Signature — Month Day Year

FACILITY
19. Discrepancy Indication Space
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. — Printed/Typed Name — Signature — Month Day Year

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (12/91)
EPA 8700—22

Yellow. GENERATOR RETAINS

Appendix C - Results of NDE Underground Storage Tank Pressure Test

CERTIFICATE OF UNDERGROUND STORAGE TANK SYSTEM TESTING

NDE ENVIRONMENTAL CORPORATION
20000 Mariner Avenue, Suite 500
Torrance, California 90503
(310) 542-4342

Test Date: 13 May 1993 Work Order#: 961108

Client: ENVIRONMENTAL STRATEGIES
11911 FREEDOM DR. STE 900
RESTON , VA 22090
Attn: ACCTS PAYABLE/DG

Site: BOYSEN PAINT
1007 41ST STREET
EMERYVILLE , CA 94608

The following tests were conducted at the site described above in accordance with all applicable portions of Federal, NFPA, and Local regulations.

TANK SYSTEM INFORMATION

Tank No.	Tank Capacity Gallons	Tank Diameter Inches	Product	Product Level Inches	Tank Material	Vapor Recovery	
						Stage I	Stage II
1	8,000	95	SOLVENT	0.00	STEEL	N/A	N/A

TESTING RESULTS

Tank No.	VPLT Volume Change (gph)	Wetted Portion of Tank Pass/fail	Ullage Test Pass/Fail	Vent & Vapor Lines Pass/Fail	Product Lines Pass/Fail	Leak Detector Present? Yes/no	Leak Detector Results Pass/Fail
1			PASS	PASS			

NDE appreciates the opportunity to serve you, and looks forward to working with you in the future. Please call any time, day or night, when you need us.

NDE Customer Service Representative

F. MILLER

Reviewed by: Benjamin Alicea

Testing conducted by

J. CONGER

Technician certification no.:

93-1116

Test Date: 13 May 1993 Work Order#: 961108

TANK TESTING DATA

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
Product:	SOLVENT					
True Capacity-gal:	8,000					
Manifolded tanks:	NO					
Manifolded Vents:	NO					
Tank Bottom to top of fill-in:	148					
Fill pipe length-in:	53					
Tank diameter-in:	95					
Tank Bottom to top of grade-in:	152					
Fill pipe diameter-in	4					
Fluid Level-in:	0.00					
Fluid Volume-gal:	0					
Water in tank-in:	0					
Specific Gravity:						
Tank Construction:	STEEL					
OFT/UFT:						
No. thermistor:						
Ground Water level-in	84					
How determined:	WELL					
Test start time: Test finish time:	: :	: :	: :	: :	: :	: :
Total temperature change (degrees F):						
Total fluid level change (inches):						
Leak Rate (GPH):						
Pass/Fail:						

Test Date: 13 May 1993 Work Order#: 961108

ULLAGE TESTING DATA

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
Product:	SOLVENT					
True Capacity-gal:	8,000					
Ullage volume-gal:	8,000					
Fluid pressure on tank bottom(psi):	0.00					
Ullage test pressure:	4					
Stabilization time:	25					
Fill start time:	11:23	:	:	:	:	:
Time to 1 PSI:	7					
Time to test pressure:	24					
Start time - test 1:	12:13	:	:	:	:	:
Nitrogen flow (cfh):	0.20					
Ullage temperature-F:	67.4					
Finish time - test 1:	12:23	:	:	:	:	:
Nitrogen flow (cfh):	0.20					
Start time - test 2:	12:24	:	:	:	:	:
Nitrogen flow (cfh):	0.20					
Ullage temperature:	67.5					
Finish time - test 2:	12:34	:	:	:	:	:
Nitrogen flow (cfh):	0.00					
Start time - test 3:	12:35	:	:	:	:	:
Nitrogen flow (cfh):	0.20					
Ullage temperature-F:	67.6					
Finish time - test 3:	12:45	:	:	:	:	:
Nitrogen Flow (cfh):	0.00					
Pass/Fail:	PASS					

ULLAGE TEST COMMENTS: ULLAGE SPACE EXCEEDS 7,500 GALLONS. INTEGRITY TEST ONLY.

NOTE: [2 consecutive test @ < 0.275 constitute a PASS] [3 consecutive test @ > 0.275 constitute a FAIL]

Test Date: 13 May 1993 Work Order#: 961108

LINE TEST DATA

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
Product:	SOLVENT					
Pump type:						
Pump Make:						
Isolator:						
Line Material:						
Line Length (ft):						
Line Diameter(in):						
Test pressure(psi)						
Bleed Back (cc):						
Test start time:	:	:	:	:	:	:
Time (1):	:	:	:	:	:	:
Finish PSI:						
Vol Change (cc):						
Time (2):	:	:	:	:	:	:
Finish PSI:						
Vol Change (cc):						
Time (3):	:	:	:	:	:	:
Finish PSI:						
Vol Change (cc):						
Volume change-GPH:						
Pass/Fail:						

LINE TEST COMMENTS:

Test Date: 13 May 1993 Work Order#: 961108

LEAK DETECTOR DATA

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
Serial number:	1					
Product:	SOLVENT					
Leak Detector manufacturer:						
Leak detector model:						
Leak detector serial number:						
Open time - sec:						
Element holding-psi:						
Resiliency - cc:						
Leak calibration-cc:						
Leak Rate - GPH:						
Metering PSI:						
Detected Leak (Y/N):						
Pass/Fail:						

FAILED LEAK DETECTORS

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
Leak Detector manufacturer:						
Leak detector model:						
Leak detector serial number:						
Leak Rate - GPH:						
Pass/Fail:						

LEAK DETECTOR TEST COMMENTS:

Test Date: 13 May 1993 Work Order#: 961108

COMMENTS

SITE CONDITIONS, NECESSARY REPAIRS:

ADDITIONAL WORK PERFORMED:

PARTS/EQUIPMENT PROVIDED:

Was lock-out/tag-out procedure used?: NO
Was location fully operational upon leaving site?: NO
Was a visual inspection of all submersible pumps, leak detectors, dispensers, etc. conducted while on-site?: NO
Was station manager or attendant present during final inspection?: YES

Appendix D - Chain-of-Custody Records

No. 005247

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME AND LOCATION:
CA0816-03	Brown Group UST closure Emeryville

SAMPLERS: *(Signature)* PRINT NAME: Bob Bealkowski

LINE	SAMPLE NO.	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	MATRIX	NO. OF CONTAINERS	8240	TPHG mod 8015	TPHD mod 8015				REMARKS
1	West tank 7'	5-13-93	1510			(5 day tat)	soil	1	X	X	X				Brass liner 5 day TAT
2	North Tank 7'	5-13-93	1429					1	X	X	X				
3	East Tank 7'		1450					1	X	X	X				
4	South Tank 7'		1415					1	X	X	X				
5	Pipeline 4'		1435					1	X	X	X				
6	Rinsate		1550			Rinsate after brass rinse (std TAT)	water	4	X	X	X				40 ml VOA 1 L glass amber (std TAT)
7	travel blank						water	1	X						
8															
9															
10															
11															
12															
13															

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	LAB NAME: Sequoia Analytical
Bob Bealkowski	5-14-93 13:45		CITY: Red Wood City
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	COURIER:
			AIRBILL NO.:
Received for Laboratory by: *(Signature)*	PRINT NAME:	Date / Time	CUSTODY SEAL NOS:
			COOLER NO:

ATTENTION LAB: SEND ANALYTICAL RESULTS TO THE FOLLOWING ESC STAFF MEMBER: Bob Bealkowski / Dave Bluestein

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive
Reston, Virginia 22090
(703)709-6500

ESC

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT; COPY TO ESC FILES

No. 005248

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME AND LOCATION:
CA0821-03	Brow Group UST closure Emeryville

SAMPLERS: *(Signature)* Bob Bealkowski

PRINT NAME: Bob Bealkowski

LINE	SAMPLE NO.	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	MATRIX	NO. OF CONTAINERS	8240	TPH G 8015	TPH D 8015				REMARKS
1	Sump Area	5-12-93	0830			clean out near sump	Soil	1	X	X	X				Brass liner
2															Std TAT
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	LAB NAME: Sequoia Analytical
Bob Bealk	5-14-93		CITY: Redwood City
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	COURIER:
			AIRBILL NO.:
Received for Laboratory by: *(Signature)*	PRINT NAME:	Date / Time	CUSTODY SEAL NOS:
			COOLER NO:

ATTENTION LAB: SEND ANALYTICAL RESULTS TO THE FOLLOWING ESC STAFF MEMBER: Bob Bealkowski / Dave Blackshield

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive
Reston, Virginia 22090
(703)709-6500

ESC

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT; COPY TO ESC FILES

No. 005238

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME AND LOCATION:
CA 821	Grow Group

SAMPLERS: *(Signature)* R. Mark Hanby

PRINT NAME: R Mark Hanby

LINE	SAMPLE NO.	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	MATRIX	NO. OF CONTAINERS	VOC 8240	TPH	TPH				REMARKS
1	1	5-13	15:20		✓	Trench Line Water	H2O		X	X	X				TAT 10 Day 3 40ml VOA with HCl
2															1 1ltr Amber bottle
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	LAB NAME: Sequoia Analytical
R Mark Hanby	5/14 11:25		CITY: Redmond City
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	COURIER:
			AIRBILL NO.:
Received for Laboratory by: *(Signature)*	PRINT NAME:	Date / Time	CUSTODY SEAL NOS:
			COOLER NO:

ATTENTION LAB: SEND ANALYTICAL RESULTS TO THE FOLLOWING ESC STAFF MEMBER:

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive
Reston, Virginia 22090
(703)709-6500

ESC

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT; COPY TO ESC FILES

No. 005260

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME AND LOCATION:
CA821-04	Grow Group UST Emeryville

SAMPLERS: *(Signature)* — PRINT NAME:

LINE	SAMPLE NO.	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	MATRIX	NO. OF CONTAINERS	8240 VOCs	TPH as GAS mod	TPHd GAS mod				REMARKS
1	1	5-21-93	8:40		✓	S - 3.5' - MWB2	Soil	1	X	X	X				std. TAT
2	2		9:00		✓	S - 5' - MWB2									
3	3		9:30		✓	S - 10' - MWB2									
4	4		5:00		✓	S - 2½' - MWB3									
5	5		5:17		✓	S - 5' - MWB3									
6	6		3:30		✓	S - 10' - MWB3									(take duplicate analysis)
7	7		7:00		✓	S - 2½' - MWB4									* call Bob Bealkowski.
8	8		7:05		✓	S - 5' - MWB4									
9	9		7:30		✓	S - 10' - MWB4									
10															
11															
12															
13															

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	LAB NAME: Sequoia
Bob Bealkowski	5-25-93 1320	Bob Bealkowski	CITY: Redwood
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	COURIER:
Bob Bealkowski	5-25-93 14:5		AIRBILL NO.:
Received for Laboratory by: *(Signature)*	PRINT NAME:	Date / Time	CUSTODY SEAL NOS:
			COOLER NO:

ATTENTION LAB: SEND ANALYTICAL RESULTS TO THE FOLLOWING ESC STAFF MEMBER: Bob Bealkowski.

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive
Reston, Virginia 22090
(703)709-6500

ESC

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No. 005211

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME AND LOCATION:
CA821.04	BROWN GROUP - EMERYVILLE

SAMPLERS: (Signature) S. Desai / E. Bealkowski

PRINT NAME: S. DESAI / E. BEALKOWSKI

LINE	SAMPLE NO.	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	MATRIX	NO. OF CONTAINERS	EPA METHOD 8240 (VOCs)	EPA METHOD modified 8015 TPH as diesel	TPH as gasoline			REMARKS
1	MWB-1	6/10/93	0945		X	BOYSEN	H_2O	5	X		X	X		
2	MWB-2		1450			BOYSEN		5			X	X		
3	MWB-3		1125			BOYSEN		5			X	X		
4	MWB-4		1400			BOYSEN		5			X	X		
5	MWD-1		1530			DUNN		5			X	X		
6	MWD-2		1442			DUNN		5			X	X		
7	MW-1		1200			CA LINEN		5			X	X		
8	MW-2		1220			CA LINEN		5			X	X		
9	LD-4		1400			ONE		5			X	X		
10	TRIP BLANK							2						
11	EQUIP BLANK (EB)		1030			MWB-3 before		5			X	X		
12	200					MWB-1 Duplicate		5			X	X		
13														

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	LAB NAME: SEQUOIA ANALYTICAL
[signature]	6/11/93	[signature]	CITY: REDWOOD CITY, CA
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	COURIER:
			AIRBILL NO.:
Received for Laboratory by: (Signature)	PRINT NAME:	Date / Time	CUSTODY SEAL NOS:
			COOLER NO:

ATTENTION LAB: SEND ANALYTICAL RESULTS TO THE FOLLOWING ESC STAFF MEMBER: Ed Bealkowski

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive
Reston, Virginia 22090
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Appendix E - Underground Storage Tank Soil Investigation and Analytical Results

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA0816-03	Sampled: May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received: May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015/8020	Reported: May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E61801	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3E61801 West Tank 7'	Sample I.D. 3E61802 North Tank 7'	Sample I.D. 3E61803 East Tank 7'	Sample I.D. 3E61804 South Tank 7'	Sample I.D. 3E61805 Pipeline 4'	Sample I.D.
Purgeable Hydrocarbons	1.0	610	420	740	N.D.	910	
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	
Total Xylenes	0.0050	0.40	N.D.	0.80	N.D.	0.60	
Chromatogram Pattern:		Non-Gas Mix > C6	Non-Gas Mix > C8	Non-Gas Mix > C8	--	Non-Gas Mix > C6	

Quality Control Data

Report Limit Multiplication Factor:	50	200	100	1.0	1.0
Date Analyzed:	5/18/93	5/18/93	5/18/93	5/17/93	5/18/93
Instrument Identification:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	100	100	103	105	101

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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Environmental Strategies	Client Project ID:	CA0816-03	Sampled: May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received: May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 3550/8015	Reported: May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E61801	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3E61801 West Tank 7'	Sample I.D. 3E61802 North Tank 7'	Sample I.D. 3E61803 East Tank 7'	Sample I.D. 3E61804 South Tank 7'	Sample I.D. 3E61805 Pipeline 4'	Sample I.D.
Extractable Hydrocarbons	1.0	1,700	330	740	8.3	550	
Chromatogram Pattern:		Non-Diesel Mix < C11	Non-Diesel Mix C9-C12	Non-Diesel Mix < C12	Non-Diesel Mix C9-C14	Non-Diesel Mix C9-C12	

Quality Control Data

Report Limit Multiplication Factor:	100	50	10	1.0	50
Date Extracted:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Instrument Identification:	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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Environmental Strategies	Client Project ID:	CA0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, West Tank 7'	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 20, 1993
Attention: Bob Bealkowski	Lab Number:	3E61801	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	10,000	N.D.
Benzene	2,000	N.D.
Bromodichloromethane	2,000	N.D.
Bromoform	2,000	N.D.
Bromomethane	2,000	N.D.
2-Butanone	10,000	N.D.
Carbon disulfide	2,000	N.D.
Carbon tetrachloride	2,000	N.D.
Chlorobenzene	2,000	N.D.
Chloroethane	2,000	N.D.
2-Chloroethyl vinyl ether	10,000	N.D.
Chloroform	2,000	N.D.
Chloromethane	2,000	N.D.
Dibromochloromethane	2,000	N.D.
1,1-Dichloroethane	2,000	N.D.
1,2-Dichloroethane	2,000	N.D.
1,1-Dichloroethene	2,000	N.D.
cis-1,2-Dichloroethene	2,000	N.D.
trans-1,2-Dichloroethene	2,000	N.D.
1,2-Dichloropropane	2,000	N.D.
cis-1,3-Dichloropropene	2,000	N.D.
trans-1,3-Dichloropropene	2,000	N.D.
Ethylbenzene	2,000	N.D.
2-Hexanone	10,000	N.D.
Methylene chloride	5,000	N.D.
4-Methyl-2-pentanone	10,000	N.D.
Styrene	2,000	N.D.
1,1,2,2-Tetrachloroethane	2,000	N.D.
Tetrachloroethene	2,000	N.D.
Toluene	2,000	N.D.
1,1,1-Trichloroethane	2,000	N.D.
1,1,2-Trichloroethane	2,000	N.D.
Trichloroethene	2,000	N.D.
Trichlorofluoromethane	2,000	N.D.
Vinyl acetate	2,000	N.D.
Vinyl chloride	2,000	N.D.
Total Xylenes	2,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

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(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, North Tank 7'	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 20, 1993
Attention: Bob Bealkowski	Lab Number:	3E61802	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	1,300	N.D.
Benzene	250	N.D.
Bromodichloromethane	250	N.D.
Bromoform	250	N.D.
Bromomethane	250	N.D.
2-Butanone	1,300	N.D.
Carbon disulfide	250	N.D.
Carbon tetrachloride	250	N.D.
Chlorobenzene	250	N.D.
Chloroethane	250	N.D.
2-Chloroethyl vinyl ether	1,300	N.D.
Chloroform	250	N.D.
Chloromethane	250	N.D.
Dibromochloromethane	250	N.D.
1,1-Dichloroethane	250	N.D.
1,2-Dichloroethane	250	N.D.
1,1-Dichloroethene	250	N.D.
cis-1,2-Dichloroethene	250	N.D.
trans-1,2-Dichloroethene	250	N.D.
1,2-Dichloropropane	250	N.D.
cis-1,3-Dichloropropene	250	N.D.
trans-1,3-Dichloropropene	250	N.D.
Ethylbenzene	250	N.D.
2-Hexanone	1,300	N.D.
Methylene chloride	630	N.D.
4-Methyl-2-pentanone	1,300	N.D.
Styrene	250	N.D.
1,1,2,2-Tetrachloroethane	250	N.D.
Tetrachloroethene	250	N.D.
Toluene	250	N.D.
1,1,1-Trichloroethane	250	N.D.
1,1,2-Trichloroethane	250	N.D.
Trichloroethene	250	N.D.
Trichlorofluoromethane	250	N.D.
Vinyl acetate	250	N.D.
Vinyl chloride	250	N.D.
Total Xylenes	250	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Project Manager

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Environmental Strategies	Client Project ID:	CA0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, East Tank 7'	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 20, 1993
Attention: Bob Bealkowski	Lab Number:	3E61803	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	5,000	N.D.
Benzene	1,000	N.D.
Bromodichloromethane	1,000	N.D.
Bromoform	1,000	N.D.
Bromomethane	1,000	N.D.
2-Butanone	5,000	N.D.
Carbon disulfide	1,000	N.D.
Carbon tetrachloride	1,000	N.D.
Chlorobenzene	1,000	N.D.
Chloroethane	1,000	N.D.
2-Chloroethyl vinyl ether	5,000	N.D.
Chloroform	1,000	N.D.
Chloromethane	1,000	N.D.
Dibromochloromethane	1,000	N.D.
1,1-Dichloroethane	1,000	N.D.
1,2-Dichloroethane	1,000	N.D.
1,1-Dichloroethene	1,000	N.D.
cis-1,2-Dichloroethene	1,000	N.D.
trans-1,2-Dichloroethene	1,000	N.D.
1,2-Dichloropropane	1,000	N.D.
cis-1,3-Dichloropropene	1,000	N.D.
trans-1,3-Dichloropropene	1,000	N.D.
Ethylbenzene	1,000	N.D.
2-Hexanone	5,000	N.D.
Methylene chloride	2,500	N.D.
4-Methyl-2-pentanone	5,000	N.D.
Styrene	1,000	N.D.
1,1,2,2-Tetrachloroethane	1,000	N.D.
Tetrachloroethene	1,000	N.D.
Toluene	1,000	N.D.
1,1,1-Trichloroethane	1,000	N.D.
1,1,2-Trichloroethane	1,000	N.D.
Trichloroethene	1,000	N.D.
Trichlorofluoromethane	1,000	N.D.
Vinyl acetate	1,000	N.D.
Vinyl chloride	1,000	N.D.
Total Xylenes	1,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, South Tank 7'	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 21, 1993
Attention: Bob Bealkowski	Lab Number:	3E61804	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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Environmental Strategies	Client Project ID:	CA0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, Pipeline 4'	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 21, 1993
Attention: Bob Bealkowski	Lab Number:	3E61805	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	10,000	N.D.
Benzene	2,000	N.D.
Bromodichloromethane	2,000	N.D.
Bromoform	2,000	N.D.
Bromomethane	2,000	N.D.
2-Butanone	10,000	N.D.
Carbon disulfide	2,000	N.D.
Carbon tetrachloride	2,000	N.D.
Chlorobenzene	2,000	N.D.
Chloroethane	2,000	N.D.
2-Chloroethyl vinyl ether	10,000	N.D.
Chloroform	2,000	N.D.
Chloromethane	2,000	N.D.
Dibromochloromethane	2,000	N.D.
1,1-Dichloroethane	2,000	N.D.
1,2-Dichloroethane	2,000	N.D.
1,1-Dichloroethene	2,000	N.D.
cis-1,2-Dichloroethene	2,000	N.D.
trans-1,2-Dichloroethene	2,000	N.D.
1,2-Dichloropropane	2,000	N.D.
cis-1,3-Dichloropropene	2,000	N.D.
trans-1,3-Dichloropropene	2,000	N.D.
Ethylbenzene	2,000	N.D.
2-Hexanone	10,000	N.D.
Methylene chloride	5,000	N.D.
4-Methyl-2-pentanone	10,000	N.D.
Styrene	2,000	N.D.
1,1,2,2-Tetrachloroethane	2,000	N.D.
Tetrachloroethene	2,000	N.D.
Toluene	2,000	N.D.
1,1,1-Trichloroethane	2,000	N.D.
1,1,2-Trichloroethane	2,000	N.D.
Trichloroethene	2,000	N.D.
Trichlorofluoromethane	2,000	N.D.
Vinyl acetate	2,000	N.D.
Vinyl chloride	2,000	N.D.
Total Xylenes	2,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA0816-03
Matrix: Soil

QC Sample Group: 3E61801 - 04

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	A.Maralit	A.Maralit	A.Maralit	A.Maralit	C.Lee
Conc. Spiked:	0.20	0.20	0.20	0.60	15
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK051793	GBLK051793	GBLK051793	GBLK051793	DBLK051393
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-5
LCS % Recovery:	95	95	100	95	34
Control Limits:	80-120	80-120	80-120	80-120	50-150
MS/MSD Batch #:	G3E36706	G3E36706	G3E36706	G3E36706	D3E42702
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-5
Matrix Spike % Recovery:	85	95	105	100	83
Matrix Spike Duplicate % Recovery:	85	90	105	100	89
Relative % Difference:	0.0	0.0	0.0	0.0	7.0

SEQUOIA ANALYTICAL

Malle A. Springer
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA0816-03
Matrix: Soil

QC Sample Group: 3E61801 - 04

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	G.Meyer	G.Meyer	G.Meyer	G.Meyer	G.Meyer
Conc. Spiked:	2500	2500	2500	2500	2500
Units:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LCS Batch#:	VBLK051993	VBLK051993	VBLK051993	VBLK051993	VBLK051993
Date Prepared:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Date Analyzed:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Instrument I.D.#:	MSHP-6	MSHP-6	MSHP-6	MSHP-6	MSHP-6
LCS % Recovery:	116	96	96	100	100
Control Limits:	59-172	62-137	66-142	59-139	60-133
MS/MSD Batch #:	V3E61902	V3E61902	V3E61902	V3E61902	V3E61902
Date Prepared:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Date Analyzed:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Instrument I.D.#:	MSHP-6	MSHP-6	MSHP-6	MSHP-6	MSHP-6
Matrix Spike % Recovery:	100	104	108	112	108
Matrix Spike Duplicate % Recovery:	84	88	92	96	92
Relative % Difference:	17	17	16	15	16

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

Malle A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	Grow Group UST Closure	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015/8020	Amended:	Jul 1, 1993
Attention: Bob Bealkowski	First Sample #:	3E59301		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3E59301 Sump Area	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	1.0	130					
Benzene	0.0050	N.D.					
Toluene	0.0050	1.0					
Ethyl Benzene	0.0050	1.3					
Total Xylenes	0.0050	7.9					
Chromatogram Pattern:		Non-Gas Mix > C6					

Quality Control Data

Report Limit Multiplication Factor:	100
Date Analyzed:	5/18/93
Instrument Identification:	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	106

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Christine Middleton

Malle A. Springer
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Environmental Strategies	Client Project ID:	Grow Group UST Closure	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported:	May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E59301		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3E59301 Sump Area	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	1.0	130					
Chromatogram Pattern:		Non-Gas Mix > C6					

Quality Control Data

Report Limit Multiplication Factor:	100
Date Analyzed:	5/18/93
Instrument Identification:	GCHP-1
Surrogate Recovery: (QC Limits = 70-130%)	106

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	Grow Group UST Closure	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 3550/8015	Reported:	May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E59301		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3E59301 Sump Area	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Extractable Hydrocarbons	1.0	10,000					
Chromatogram Pattern:		Non-Diesel Mix C9-C12					

Quality Control Data

Report Limit Multiplication Factor:	500
Date Extracted:	5/17/93
Date Analyzed:	5/17/93
Instrument Identification:	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	Grow Group UST Closure	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, Sump Area	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 21, 1993
Attention: Bob Bealkowski	Lab Number:	3E59301	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	1,000	N.D.
Benzene	200	N.D.
Bromodichloromethane	200	N.D.
Bromoform	200	N.D.
Bromomethane	200	N.D.
2-Butanone	1,000	N.D.
Carbon disulfide	200	N.D.
Carbon tetrachloride	200	N.D.
Chlorobenzene	200	N.D.
Chloroethane	200	N.D.
2-Chloroethyl vinyl ether	1,000	N.D.
Chloroform	200	N.D.
Chloromethane	200	N.D.
Dibromochloromethane	200	N.D.
1,1-Dichloroethane	200	N.D.
1,2-Dichloroethane	200	N.D.
1,1-Dichloroethene	200	N.D.
cis-1,2-Dichloroethene	200	N.D.
trans-1,2-Dichloroethene	200	N.D.
1,2-Dichloropropane	200	N.D.
cis-1,3-Dichloropropene	200	N.D.
trans-1,3-Dichloropropene	200	N.D.
Ethylbenzene	**200**	**1,400**
2-Hexanone	1,000	N.D.
Methylene chloride	**500**	**17,000**
4-Methyl-2-pentanone	1,000	N.D.
Styrene	200	N.D.
1,1,2,2-Tetrachloroethane	200	N.D.
Tetrachloroethene	200	N.D.
Toluene	**200**	**1,100**
1,1,1-Trichloroethane	200	N.D.
1,1,2-Trichloroethane	200	N.D.
Trichloroethene	**200**	**460**
Trichlorofluoromethane	200	N.D.
Vinyl acetate	200	N.D.
Vinyl chloride	200	N.D.
Total Xylenes	**200**	**14,000**

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: Grow Group UST Closure
Matrix: Soil
QC Sample Group: 3E59301

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	A.Maralit	A.Maralit	A.Maralit	A.Maralit	C.Lee
Conc. Spiked:	0.20	0.20	0.20	0.60	15
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK051793	GBLK051793	GBLK051793	GBLK051793	DBLK051393
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-5
LCS % Recovery:	95	95	100	95	34
Control Limits:	80-120	80-120	80-120	80-120	50-150
MS/MSD Batch #:	G3E36706	G3E36706	G3E36706	G3E36706	D3E42702
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/13/93
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-5
Matrix Spike % Recovery:	85	95	105	100	83
Matrix Spike Duplicate % Recovery:	85	90	105	100	89
Relative % Difference:	0.0	0.0	0.0	0.0	7.0

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Maile A. Springer
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: Grow Group UST Closure
Matrix: Soil
QC Sample Group: 3E59301

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	G.Meyer	G.Meyer	G.Meyer	G.Meyer	G.Meyer
Conc. Spiked:	2500	2500	2500	2500	2500
Units:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LCS Batch#:	VBLK051993	VBLK051993	VBLK051993	VBLK051993	VBLK051993
Date Prepared:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Date Analyzed:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Instrument I.D.#:	MSHP-6	MSHP-6	MSHP-6	MSHP-6	MSHP-6
LCS % Recovery:	116	96	96	100	100
Control Limits:	59-172	62-137	66-142	59-139	60-133
MS/MSD Batch #:	V3E61902	V3E61902	V3E61902	V3E61902	V3E61902
Date Prepared:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Date Analyzed:	5/19/93	5/19/93	5/19/93	5/19/93	5/19/93
Instrument I.D.#:	MSHP-6	MSHP-6	MSHP-6	MSHP-6	MSHP-6
Matrix Spike % Recovery:	100	104	108	112	108
Matrix Spike Duplicate % Recovery:	84	88	92	96	92
Relative % Difference:	17	17	16	15	16

Please Note:
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Environmental Strategies	Client Project ID:	Grow Group/CA921	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported:	May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E58701		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3E58701 Trench Water	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	50	24,000					
Chromatogram Pattern:		Non-Gas > C8					

Quality Control Data

Report Limit Multiplication Factor:	200
Date Analyzed:	5/17/93
Instrument Identification:	GCHP-3
Surrogate Recovery: (QC Limits = 70-130%)	94

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Marie A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	Grow Group/CA921	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 3550/8015	Reported:	May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E58701		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3E58701 Trench Water	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Extractable Hydrocarbons	1.0	12,000					
Chromatogram Pattern:		Non-Diesel Mix					

Quality Control Data

Report Limit Multiplication Factor:	400
Date Extracted:	5/18/93
Date Analyzed:	5/18/93
Instrument Identification:	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Maile A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	Grow Group/CA821	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015/8020	Reported:	May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E58701	Revised:	Jul 15, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3E58701 Trench Water
Purgeable Hydrocarbons	50	24,000
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Total Xylenes	0.50	300
Chromatogram Pattern:		Non-Gas > C8

Quality Control Data

Report Limit Multiplication Factor:	200
Date Analyzed:	5/17/93
Instrument Identification:	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	94

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Su Patel

Su Patel
Project Manager

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Environmental Strategies	Client Project ID:	Grow Group/CA921	Sampled: May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, Trench Water	Received: May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed: May 20, 1993
Attention: Bob Bealkowski	Lab Number:	3E58701	Reported: May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	130

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Project Manager

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: Grow Group/CA921
Matrix: Water
QC Sample Group: 3E58701

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp	C.Lee
Conc. Spiked:	10	10	10	30	15
Units:	µg/L	µg/L	µg/L	µg/L	mg/kg
LCS Batch#:	GBLK051793	GBLK051793	GBLK051793	GBLK051793	DBLK051893
Date Prepared:	N.A.	N.A.	N.A.	N.A.	5/18/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/18/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3	GCHP-5
LCS % Recovery:	110	110	110	110	87
Control Limits:	80-120	80-120	80-120	80-120	50-150
MS/MSD Batch #:	G3E37003	G3E37003	G3E37003	G3E37003	D3E62001
Date Prepared:	N.A.	N.A.	N.A.	N.A.	5/18/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/18/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3	GCHP-5
Matrix Spike % Recovery:	100	100	100	103	71
Matrix Spike Duplicate % Recovery:	100	100	110	103	84
Relative % Difference:	0.0	0.0	9.5	0.0	17

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Malle A. Springer
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: Grow Group/CA921
Matrix: Water
QC Sample Group: 3E58701

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	M.Williams	M.Williams	M.Williams	M.Williams	M.Williams
Conc. Spiked:	50	50	50	50	50
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	VBLK051793	VBLK051793	VBLK051793	VBLK051793	VBLK051793
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Instrument I.D.#:	MSF-3	MSF-3	MSF-3	MSF-3	MSF-3
LCS % Recovery:	106	94	106	102	104
Control Limits:	61-145	71-120	76-127	76-125	75-130
MS/MSD Batch #:	V3E11201	V3E11201	V3E11201	V3E11201	V3E11201
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Instrument I.D.#:	MSF-3	MSF-3	MSF-3	MSF-3	MSF-3
Matrix Spike % Recovery:	100	102	102	110	102
Matrix Spike Duplicate % Recovery:	100	100	102	110	104
Relative % Difference:	0.0	2.0	0.0	0.0	1.9

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Maile A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA-0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported:	May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E62201		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3E62201 Rinsate	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	50	23,000					
Chromatogram Pattern:		Non-Gas > C8					

Quality Control Data

Report Limit Multiplication Factor:	200
Date Analyzed:	5/17/93
Instrument Identification:	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	94

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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Environmental Strategies	Client Project ID:	CA-0816-03	Sampled: May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received: May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 3510/3520/8015	Reported: May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E62201	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3E62201 Rinsate	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Extractable Hydrocarbons	50	150,000					
Chromatogram Pattern:		Non-Diesel Mix , <C11					

Quality Control Data

Report Limit Multiplication Factor:	1,000
Date Extracted:	5/17/93
Date Analyzed:	5/19/93
Instrument Identification:	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Malle A. Springer
Project Manager

SEQUOIA ANALYTICAL

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Environmental Strategies	Client Project ID:	CA-0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, Rinsate	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 20, 1993
Attention: Bob Bealkowski	Lab Number:	3E62201	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	100	N.D.
Benzene	20	N.D.
Bromodichloromethane	20	N.D.
Bromoform	20	N.D.
Bromomethane	20	N.D.
2-Butanone	100	N.D.
Carbon disulfide	20	N.D.
Carbon tetrachloride	20	N.D.
Chlorobenzene	20	N.D.
Chloroethane	20	N.D.
2-Chloroethyl vinyl ether	100	N.D.
Chloroform	20	41
Chloromethane	20	N.D.
Dibromochloromethane	20	N.D.
1,1-Dichloroethane	20	N.D.
1,2-Dichloroethane	20	N.D.
1,1-Dichloroethene	20	N.D.
cis-1,2-Dichloroethene	20	N.D.
trans-1,2-Dichloroethene	20	N.D.
1,2-Dichloropropane	20	N.D.
cis-1,3-Dichloropropene	20	N.D.
trans-1,3-Dichloropropene	20	N.D.
Ethylbenzene	20	N.D.
2-Hexanone	100	N.D.
Methylene chloride	50	N.D.
4-Methyl-2-pentanone	100	N.D.
Styrene	20	N.D.
1,1,2,2-Tetrachloroethane	20	N.D.
Tetrachloroethene	20	N.D.
Toluene	20	N.D.
1,1,1-Trichloroethane	20	N.D.
1,1,2-Trichloroethane	20	N.D.
Trichloroethene	20	N.D.
Trichlorofluoromethane	20	N.D.
Vinyl acetate	20	N.D.
Vinyl chloride	20	N.D.
Total Xylenes	20	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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Environmental Strategies	Client Project ID:	CA-0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, Travel Blank	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	May 20, 1993
Attention: Bob Bealkowski	Lab Number:	3E62202	Reported:	May 21, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA-0816-03
Matrix: Water
QC Sample Group: 3E62201

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp	C.Lee
Conc. Spiked:	10	10	10	30	300
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK051793	GBLK051793	GBLK051793	GBLK051793	DBLK051793
Date Prepared:	N.A.	N.A.	N.A.	N.A.	5/17/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/19/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3	GCHP-5
LCS % Recovery:	110	110	110	110	63
Control Limits:	80-120	80-120	80-120	80-120	50-150
MS/MSD Batch #:	G3E37003	G3E37003	G3E37003	G3E37003	D3E61502
Date Prepared:	N.A.	N.A.	N.A.	N.A.	5/17/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/19/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3	GCHP-5
Matrix Spike % Recovery:	100	100	100	103	26
Matrix Spike Duplicate % Recovery:	100	100	110	103	19
Relative % Difference:	0.0	0.0	9.5	0.0	31

SEQUOIA ANALYTICAL

Malle A. Springer
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA-0816-03
Matrix: Water
QC Sample Group: 3E62201

Reported: May 21, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	M.Williams	M.Williams	M.Williams	M.Williams	M.Williams
Conc. Spiked:	50	50	50	50	50
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	VBLK051793	VBLK051793	VBLK051793	VBLK051793	VBLK051793
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Instrument I.D.#:	MSF-3	MSF-3	MSF-3	MSF-3	MSF-3
LCS % Recovery:	106	94	106	102	104
Control Limits:	61-145	71-120	76-127	76-125	75-130
MS/MSD Batch #:	V3E11201	V3E11201	V3E11201	V3E11201	V3E11201
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/17/93
Instrument I.D.#:	MSF-3	MSF-3	MSF-3	MSF-3	MSF-3
Matrix Spike % Recovery:	100	102	102	110	102
Matrix Spike Duplicate % Recovery:	100	100	102	110	104
Relative % Difference:	0.0	2.0	0.0	0.0	1.9

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Project Manager

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Environmental Strategies	Client Project ID:	CA0816-03	Sampled:	May 13, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received:	May 14, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015/8020	Reported:	May 21, 1993
Attention: Bob Bealkowski	First Sample #:	3E62201	Revised:	Jul 15, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3E62201 Rinsate
Purgeable Hydrocarbons	50	23,000
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	130
Total Xylenes	0.50	380
Chromatogram Pattern:		Non-Gas > C8

Quality Control Data

Report Limit Multiplication Factor:	200
Date Analyzed:	5/17/93
Instrument Identification:	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	94

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Su Patel

Su Patel
Project Manager

Appendix F- Health and Safety Plan

HEALTH AND SAFETY PLAN FOR FORMER BOYSEN UNDERGROUND STORAGE TANK PROJECT IN EMERYVILLE, CALIFORNIA

PREPARED

BY

ENVIRONMENTAL STRATEGIES CORPORATION

NOVEMBER 10, 1992

Contents

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Appendix B - Field standard operating procedures for putting on and decontaminating personal protective equipment
Appendix C - Heat stress and heat stress monitoring
Appendix D - Cold stress prevention for winter months
Appendix E - ESC medical monitoring program
Appendix F - Properties of materials and toxicological profiles
Appendix G - Site health and safety coordinator responsibilities
Appendix H - Calibration procedures for the HNu

Introduction

This Health and Safety Plan provides an overview of conditions at the facility and describes the safety procedures to be employed and the rationale for their selection. This Health and Safety Plan has been prepared to address any potentially health threatening contingencies. All personnel working at the site will be briefed by the site Health and Safety Coordinator and will be required to become familiar with the following sections of this plan:

- Contingency Plan and Emergency Procedures
- Safety Rules and Personal Hygiene - Appendix A
- Field Standard Operating Procedures for Putting On and Decontaminating Personal Protective Equipment - Appendix B
- Heat Stress and Heat Stress Monitoring - Appendix C
- Cold Stress Prevention for Winter Months - Appendix D

ESC personnel are included in a medical monitoring program that is described in Appendix E.

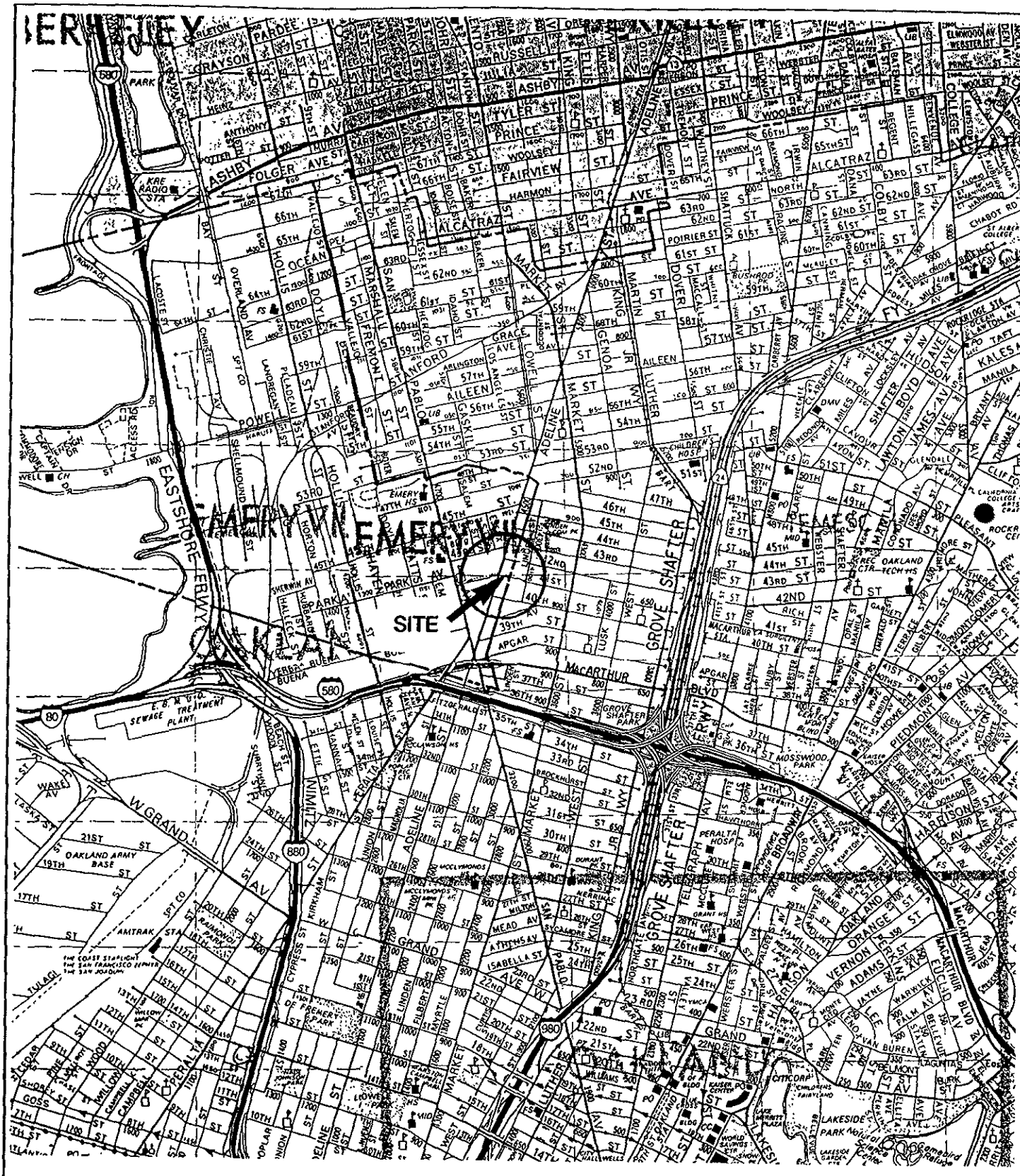
This Health and Safety Plan will be used to ensure that adequate site safety practices are used during the following field activities:

- In-place tank closure
- Drilling of boreholes
- Installation of monitoring wells
- Soil and groundwater sample collection and analysis

All onsite personnel performing these field activities, including ESC and contractors working under the direction of ESC, will be subject to the standards, procedures, and requirements specified in this plan. Contractors wanting to follow their own companies' health and safety protocols may do so if they are at least equivalent to the safety guidelines contained in this plan. Such a determination of equivalency will be made solely by ESC. For the in-place closure and soil and groundwater investigation, Tom Sparrowe has been assign as the health and safety officer. His pager number is (408) 951-2989.

Site Description

The site located at 1001 42nd Street, EmerYville, California was formerly owned by Boysen Paint Company, a sister subsidiary to Ameritone Paint Corporation (a wholly owned subsidiary of Grow Group, Inc.). The site is now owned by Mr. and Mrs. Kozel, operated by Oakland National Engravers (ONE) and also contains a furniture restoration shop. There is an underground storage tank that is located on the north side of 41st Street, approximately 125 feet east of its intersection with Adeline Street, in Emeryville, California (Figures 1 and 2). The 5000-gallon tank was installed under the sidewalk between the rear of the brick building occupied by ONE and the northern curb for 41st Street. Boysen used the tank for storing mineral spirits.



Source: The Thomas Guide, 1988, Alameda and Contra Costa Counties Street & Directory

Scale: 1 inch = 2,200 feet

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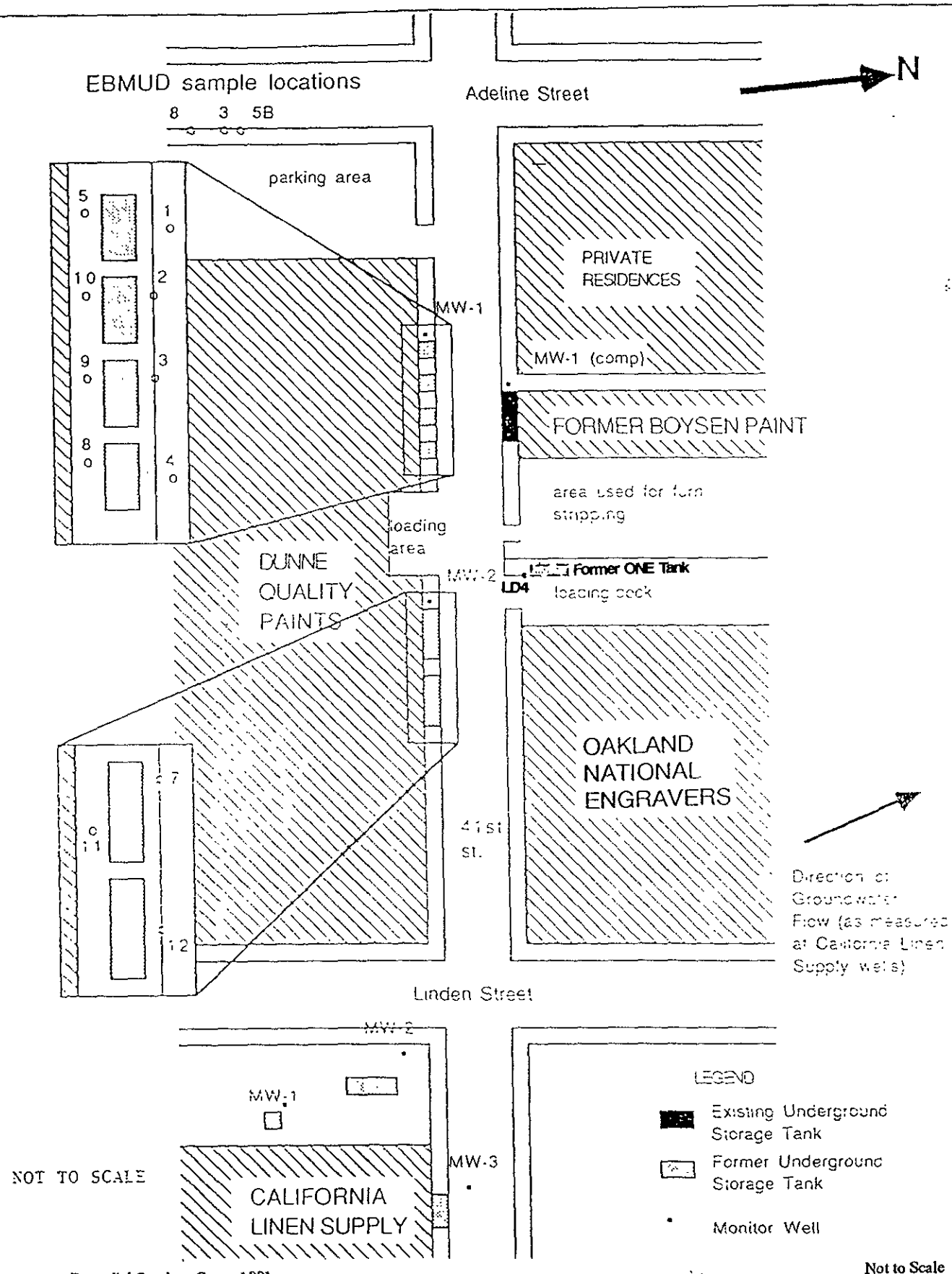
Figure 1
Location Map,
Former Boysen Paint Company,
Emeryville, California



Source: OHM Remedial Services Corp., 1991.

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Figure 2
Locations of Present and Former Underground Storage Tanks,
Former Boysen Paint Company,
Emeryville, California

Exposure to Toxic Substances

The primary constituents of concern at the site are total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, and xylene (BTEX), and methylene chloride (MC). Brief toxicological profiles of the major constituents of concern are included in Appendix E.

Personnel performing sampling, drilling, and excavation activities will be handling equipment that contacts soil and liquid residue from contaminated soil and that may give off volatile organic fumes from these materials. These workers also may be exposed to airborne dust that may contain some hazardous materials and to solvents that will be used in decontamination procedures. To protect these workers from skin contact and breathing fumes and dust, they will use Level D protection and upgrade to Level C protection as described in the **Personal Protective Equipment** section of this plan.

Hazard Assessment

Exposure limit data are expressed as time weighted averages (TWA) or ceiling limits. TWAs promulgated in OSHA regulations are referred to as permissible exposure limits (PELs). TWAs found in NIOSH publications are recommended exposure limits (RELs). The American Conference of Governmental and Industrial Hygienists (ACGIH) adopts values for exposure limits referred to as threshold limit values (TLVs). ACGIH further divides TLVs into TWAs, ceiling limits, and short-term exposure limits (STELs).

The ionization potentials (IPs), odor thresholds, exposure limits, and concentrations that are immediately dangerous to life and health (IDLH) for contaminants at the site are listed in Table 1.

The potential for injuries inherent in operating heavy equipment represents another hazard, especially because operators may be wearing restrictive clothing. The use of excavation equipment creates the potential for contact with overhead electric lines and underground utility lines. Underground utility lines will be located and avoided.

If an accident occurs, the nearest medical assistance will be sought as specified in the section entitled **Contingency Plan and Emergency Procedures.**

Table 1

Contaminants Detected at the Site

	Ionization Potential (eV)	Exposure Limits (ppm)		IDLH (ppm)
		PEL	TVL (STEL)	
BENZENE	9.25	1	NA	3,000
METHYLENE CHLORIDE	11.32	100	NA	5,000
TOLUENE	8.82	200	150	2,000
XYLENES (total)	8.56	100	150	1,000

NA=Not available

Site Controls

An exclusion area will be established using caution tape or another suitable physical barrier if it is deemed necessary to restrict access while sampling or other field activity is being performed. If necessary, a fence will be erected between the street and the area to be sampled to restrict access and visibility. Inside the exclusion area, a contamination reduction area (CRA) will be established through which all workers must enter and exit. Personnel leaving the exclusion area will undergo the decontamination procedures outlined in item 13 of Appendix B while in the CRA. The CRA also will have a caution tape barrier around it. Lined garbage cans, buckets, wash basins, nonphosphate soap solutions, rinse water, and scrub brushes will be provided in the CRA.

Licensed waste hauler trucks will be loaded preferably next to excavation areas. The trailer beds must be lined with polyethylene before being loaded. Attempts will be made to put polyethylene sheeting on the pavement or ground surface of truck loading areas before positioning the trucks. This will prevent needing to wash down truck tires before departure from the facility. If a liner cannot be placed under the truck, a separate truck wash down area will be necessary to prevent contaminated soil from being carried out by truck tires. Trailer bed covers must be secured before the trucks can leave the facility. Heavy equipment, such as backhoes, loaders, and bulldozers must be decontaminated before leaving the facility. Wash down areas for trucks and heavy equipment will be designed and set up as required.

Level of Protection

Staff members and contractors of ESC responsible for the project have completed a 40-hour health and safety training course fulfilling initial instruction requirements specified in 29 CFR 1910.120(e)(2).

An HNu photoionization detector (PID) or equivalent with a 10.5 eV probe will be used to establish baseline conditions before operations begin. Readings will be taken upwind and downwind from work areas to determine background levels of volatile compounds in the air. Organic vapor levels will be monitored above the surface of sampling points to determine if sampling activities are allowing volatile compounds to escape. The PID will also be used to measure the vapor levels in the breathing zone of onsite personnel. Breathing zone PID readings will be used to establish the level of personal protective equipment (PPE) to be used. Sustained readings from 5 to 50 ppm will require an upgrade from Level D to Level C protection. Sustained readings from greater than 5 ppm above background in the breathing zone dictate that personnel should be withdrawn temporarily from the work zone pending characterization of the contaminants present.

When the workplace atmosphere has been characterized, this information, along with data on the toxicity of the contaminants present, will be used to determine the level of PPE required in the work area.

It is not ESC policy to have its staff perform work requiring Level B protection. If it is determined that conditions warrant Level B protection, work will stop until the contractor's previous experience conducting drilling, sampling, or removal operations in Level B protection is verified or until training for Level B work is given to contractors by qualified personnel and until ESC determines if a separate subcontractor will be retained to conduct Level B operations or whether to have the current contractors conduct the operations with ESC maintaining an oversight role (observing from outside the immediate work zone).

The PID will be calibrated at least once at the start of each operating day or when the instruments supply erratic readings. In case of a malfunction, backup equipment will be delivered to the site. Calibration procedures are given in Appendix H.

Personal Protective Equipment

Level C personal protective equipment (PPE) will consist of the following equipment:

- dual canister full face air purifying respirator (NIOSH approved)
- organics, dust, and pesticide respirator cartridges (MSA cartridges GMA-H, GMC-H, GMC-S)
- Tyvek or Saranex-coated Tyvek coveralls
- steel-toed work boots
- outer latex booties
- inner PVC surgical or latex gloves
- outer nitrile, viton, neoprene, or butyl gloves
- hardhats, required when heavy equipment is being used

Level D PPE will consist of the same items as those for Level C. Respirators will be available but not worn unless organic vapors exceed established background levels. Contractors will provide their own PPE.

The fit of the facepiece-to-face seal of the respirator affects its performance. The Site Health and Safety Coordinator will be responsible for ensuring that a good seal is maintained. After each day's use, the respirator will be inspected, cleaned, and stored.

PPE that is damaged will be immediately replaced. Backup equipment will be kept onsite for replacement as necessary.

The following protective equipment will be discarded and replaced daily:

- respirator cartridges
- Tyvek coveralls
- outer booties
- inner surgical gloves
- outer gloves

New outer gloves should be used for each sample. Procedures for putting on PPE are given in Appendix B. Item 15 in Appendix B outlines procedures for containerizing PPE and personal decontamination wastes.

Onsite Safety Equipment

Several pieces of safety equipment will be provided near the work area. A PID meter will be used to detect organic vapors. A first aid kit will be kept onsite near the work area.

Emergency showers or water hoses will be located onsite to wash down personnel rapidly in emergency situations.

Contingency Plan and Emergency Procedures

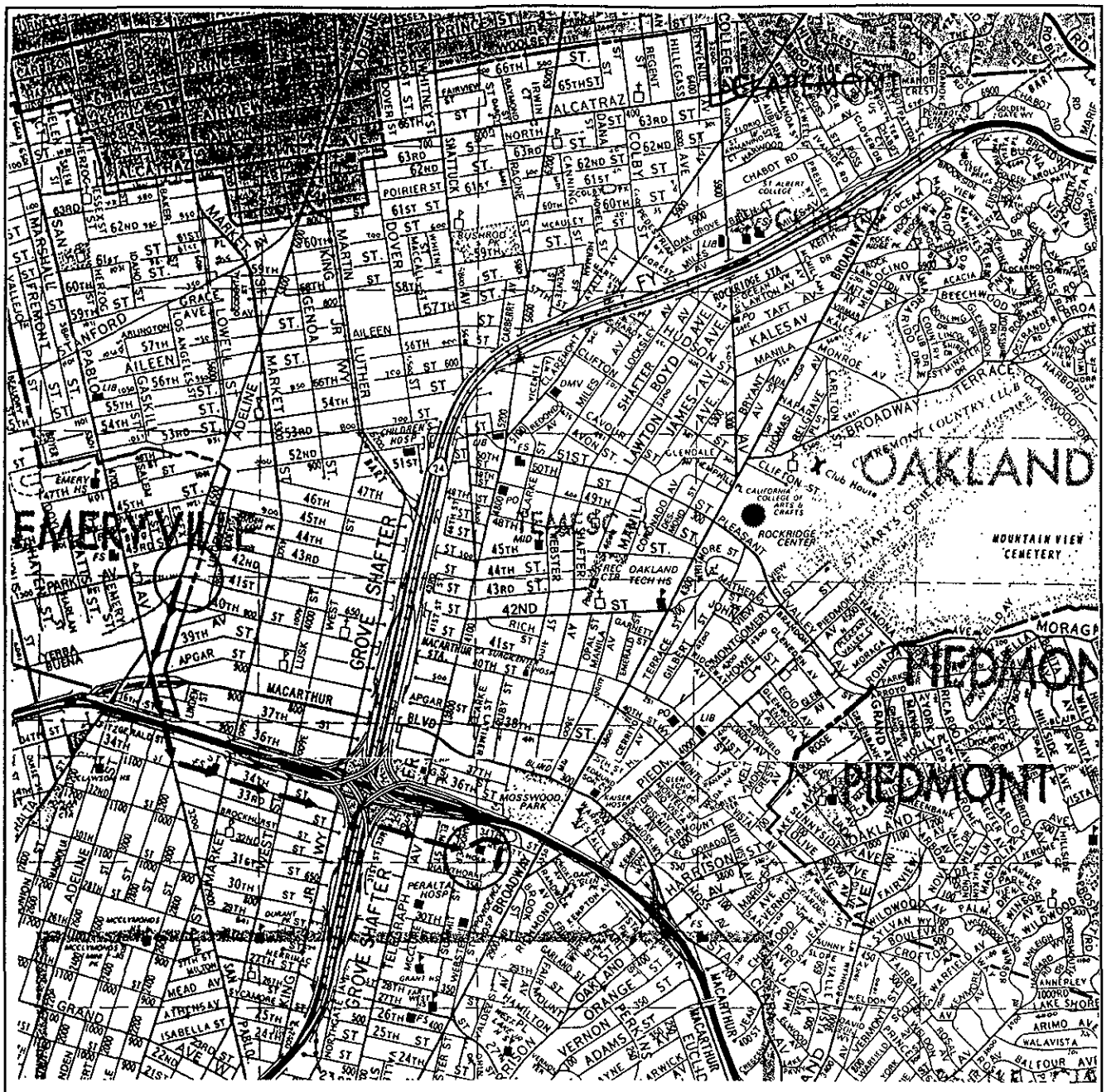
If PID readings indicate a sudden increase of constituents in the breathing zone to levels exceeding IDLH levels or if other threatening hazards are noted, ESC and its contractors will evacuate the area. No personnel will return unless instrumentation, engineering judgment, or an emergency response official indicates that it is safe and proper to do so.

To obtain medical assistance as soon as possible in case of an emergency, the following telephone numbers, addresses, and directions for the nearest medical treatment facilities will be posted at the site:

Ambulance:	911
Police:	Emeryville Police Department 2449 Powell 911/(510) 596-3737
Fire department:	Emeryville Fire Department 4331 San Pablo Avenue 911/(510) 652-2222
Poison control center:	911
Hospital:	Merritt Hospital Hawthorn Avenue & Webster (510) 655-4000
Directions to hospital:	Go west on 41st Street, turn left (south) onto Adeline Street. Turn left onto San Pablo Avenue. Turn left onto 34th street, turn right onto Webster. Merritt Hospital is located at the corner of Hawthorn and Webster.

A map showing the route to the hospital is included as Figure 3.

In an emergency, the primary concern is to prevent the loss of life or severe injury to site personnel. If immediate medical treatment is required, decontamination will be delayed until the condition of the victim has stabilized. If decontamination can be performed without interfering with first aid or if a worker has been contaminated with an extremely toxic or corrosive material that could cause severe injury, decontamination will be performed immediately. If an emergency caused by a heat-related illness develops, protective clothing will be removed from the victim as soon as possible to reduce heat stress.



Source: Thomas Brothers Map Guide, 1988 Edition

Scale: 1" = 2,200'

ESC

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Figure 3
Hospital Route Map
Merritt Hospital
Oakland, California

References

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Camp, Dresser & McKee, 1986. REM III Health and Safety Assurance Manual. Annandale, Virginia.

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U.S. Environmental Protection Agency, 1984. Standard Operating Guides. Office of Emergency and Remedial Response Support Division. Edison, New Jersey.

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Appendix A - Safety Rules and Personal Hygiene

Safety Rules and Personal Hygiene

1. Remove all facial hair that interferes with a satisfactory fit of respiratory protective equipment.
2. Do not wear contact lenses while wearing full-face respirators.
3. Do not take prescribed drugs unless specifically approved by a physician.
4. In the work zone, do not eat, drink, smoke, chew gum or tobacco, or engage in any other practice that increases the probability of hand-to-mouth transfer or ingestion of material.
5. Wash hands and face thoroughly after leaving the work area and before eating, drinking, or any other activities.
6. Thoroughly wash entire body as soon as possible after removing Level C protective garments.
7. Whenever possible, avoid contact with contaminated or suspected contaminated surfaces.

Appendix B - Field Standard Operating Procedures for Putting On and

Decontaminating Personal Protective Equipment

Field Standard Operating Procedures for

Putting On and Decontaminating

Personal Protective Equipment

1. Park vehicles outside the site boundaries.
2. During the pre-work safety meeting, the site manager will provide the following information:
   - A. a description of the site and known problem areas
   - B. the level of protection required
   - C. emergency medical information
   - D. the locations of the first aid kit, showers, telephones, nearest water supply, ice, and lavatory
3. Use the nearest lavatory.
4. Lay out and check safety gear.
5. Put on safety gear in the following order:
   - A. Saranex or Tyvek coveralls.
   - B. Steel-toed work boots.
   - C. Connect suit and boots with tape.
   - D. Outer booties, if used.
   - E. Air purifying respirators (APRs), if required.
6. Put on APRs as follows:
   - A. Inspect.
     - (1) Inspect before each use to ensure that they have been cleaned adequately.
     - (2) Check material conditions for signs of pliability, deterioration, or distortion.
     - (3) Examine cartridges and ensure that they are the correct type for the intended use, that the expiration date has not passed, and that they have not been opened or used previously.
     - (4) Check face shields for cracks or fogginess.
   - B. Loosen all harness strap adjustments.

C. Place chin in chin cup and draw back evenly on strap adjustments - the two bottom straps first, then the two top straps, and the center top strap last.

D. Check that the respirator is centered evenly on the face and that the straps are not uncomfortably tight.

E. Check for leaks or proper facial seals.

(1) To conduct a negative-pressure test, close the inlet part with the palm of the hand so it does not pass air, and gently inhale for about 10 seconds. Any inward rush of air indicates a poor fit. Note that a leaking facepiece may be drawn tightly to the face to form a good seal, giving a false indication of adequate fit.

(2) To conduct a positive-pressure test, gently exhale while covering the exhalation valve to ensure that a positive pressure can be built up. Failure to build a positive pressure indicates a poor fit.

7. Put on the rest of the gear in the following order:

A. Raise hood

B. Hardhat

C. Surgical gloves

D. Outer gloves

E. Connect gloves and suit with tape

8. Select a buddy to act as a safety backup.

9. Check your buddy's equipment and have your buddy check yours for rips, tears, or malfunctions. Pay special attention to respirators, making sure that seals are good and that cartridges are securely in place.

10. If any equipment or gear gets damaged or if your suit tears badly, GO BACK.

11. If you experience physical discomfort, breathing difficulties, light-headedness, dizziness, or other abnormalities, GO BACK.

12. When you return, have your buddy check for external accumulation of contamination and remove it. Also check gear for damage.

13. Decontamination will be performed in steps appropriate to site conditions as required, as follows:

Step 1 - Segregated Equipment Drop: Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, clipboards, etc.) in different containers with plastic liners. Each may be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination. This equipment may be reused if properly decontaminated.

Equipment: various sizes of containers

plastic drop cloths

Step 2 - Boot Cover and Outer Glove Wash and Rinse: (Optional - will be used at the Site Health and Safety Coordinator's discretion.)

Equipment: pesticide sprayer with nozzle

two wash basins or tubs

scrub brush

water

liqui-nox nonphosphate soap solution (1%)

Step 3 - Tape Removal: Remove tape around boots and gloves, and deposit in container with plastic liner. Remove boot covers, then outer gloves, and place them in the container.

Equipment: container (30-50 gallons)

plastic liners

folding chairs

Step 4 - Safety Boot Wash and Rinse: (Optional - will be used at discretion of ESC field team members.)

Equipment: two wash basins or tubs

scrub brush

water

liqui-nox solution (1%)

Step 5 - Protective Coverall Removal: With the assistance of a helper, remove protective coverall. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
folding chairs
plastic liners

Step 6 - Respirator Removal: Remove facepiece. Avoid touching face with gloves. If work is completed for the day, discard cartridges in lined container, and wash and rinse respirator following the procedures on page B-5.

Equipment: container (30-50 gallons)
plastic liners

Step 7 - Inner Glove Removal: Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

14. Respirators will be cleaned daily by hand washing with MSA cleaner-sanitizer solution followed by a thorough rinse and air drying. NEVER ALLOW A RESPIRATOR TO DRY WITH THE STRAPS PLACED FORWARD ACROSS THE FACESHIELD BECAUSE THIS MAY CAUSE CHANGES IN THE FACE-TO-RESPIRATOR SEAL SURFACE. The specific procedures to be employed are as follows:

A. Remove all cartridges (canisters) and filters plus gaskets and seals not permanently affixed to their seats.

B. Loosen harness adjustment straps.

C. Remove exhalation valve cover.

D. Remove inhalation and exhalation valves.

E. Remove protective faceshield cover.

F. Wash facepiece in MSA cleaner/sanitizer powder mixed with warm water, preferably at a temperature of 120° F. Wash components separately from facepiece. Heavy soil may be removed from the facepiece surface using a medium-soft handbrush.

G. Remove all parts from the wash solution, and rinse twice in clean, warm water.

H. Air dry all parts in a designated clean area.

I. Pat facepieces, valves, and seats to remove any remaining soap residue, water, or other foreign material with a clean, damp, lint-free cloth.

J. Reassemble respirator.

K. Place respirator in a plastic bag and the respirator box or otherwise store the respirator to prevent exposure to dust, moisture, sunlight, damaging chemicals, extreme temperatures, and impact.

15. Investigation-derived waste material will be handled as follows:

A. Expendable material, such as tape, boot covers, inner and outer gloves, coveralls, and expendable sampling items, will be placed in a lined 30- to 33-gallon garbage can. When the container is full, the garbage sack will be removed and promptly placed in a contaminated soil stockpile or placed directly into licensed hazardous waste hauler trucks for offsite disposal.

B. Wash and rinse waters from personal and equipment decontamination will be containerized in 55-gallon drums.

C. All drummed wastes will be labeled "Property of [company name]." Drummed liquids will be pumped into a tank truck approved for hazardous waste transport if it is cost effective to do so. If drums must be transported offsite, they will be labeled in accordance with DOT shipping regulations contained in 49 CFR Parts 171-179 and transported offsite by a licensed waste hauler.

Appendix C - Heat Stress and Heat Stress Monitoring

Heat Stress and Heat Stress Monitoring

Heat is one of the most common (and potentially serious) illnesses at hazardous waste sites where PPE is worn; therefore, regular monitoring and other preventive precautions are vital. Shelter from the sun will be provided during rest periods. If necessary, work will be performed during the cooler night hours. Table A lists the signs and symptoms of heat stress. Initial work schedules will be approximately 90 minutes of work followed by 15 minutes of rest. These schedules will be modified based on the following monitoring stated in NIOSH, et al. (1985).

- Heart rate. Heart rate will be measured during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, the next work cycle will be shortened by one-third without changing the rest period. If the heart rate still exceeds 110 beats per minute at the next rest period, the following work cycle will be shortened by one-third.
- Oral temperature. A clinical thermometer (three minutes under the tongue) or similar device will be used to measure the oral temperature at the end of the work period (before drinking). If oral temperature exceeds 99.6° F (37.6° C), the next work cycle will be reduced by one-third without changing the rest period. If oral temperature still exceeds 99.6° F (37.36° C) at the beginning of the next rest period, the following work cycle will be shortened by one-third. A worker will not be permitted to wear a semipermeable or impermeable garment when his or her oral temperature exceeds 100.6° F (38.1° C).
- Body water loss, if possible. Weight will be measured on a scale accurate to $\pm$0.25 lb at the beginning and end of each work day to see if enough fluids are being taken to prevent dehydration. The body water loss should not exceed 1.5 percent total body weight loss in a work day.

Table A

Signs and Symptoms of Heat Stress

- **Heat rash** may result from continuous exposure to heat or humid air.

- **Heat cramps** are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:

  muscle spasms

  pain in the hands, feet, and abdomen

- **Heat exhaustion** occurs from increased stress on various body organs, including inadequate blood circulation caused by cardiovascular insufficiency or dehydration. Signs and symptoms include:

  pale, cool, moist skin

  heavy sweating

  dizziness

  nausea

  fainting

- **Heat stroke** is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms include:

  red, hot, usually dry skin

  lack of or reduced perspiration

  nausea

  dizziness and confusion

  strong, rapid pulse

  coma

Source: National Institute of Occupational Safety and Health/Occupational Safety and Health Administration/U.S. Coast Guard/U.S. Environmental Protection Agency. 1985. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

Appendix D - Cold Stress Prevention for Winter Months

Cold Stress Prevention for Winter Months

The types of cold-related stress are frostbite, hypothermia, and immersion or trench foot. Personnel performing field tasks in the winter months should be aware of the signs and symptoms of cold-related stress so they can take precautionary measures to avoid cold-induced injury and illness. The following is a brief synopsis of each type of cold-related stress.

Frostbite results when cells are cooled until ice crystals form inside them. Most injuries from frostbite are localized to the exposed part of the body. First degree frostbite or frostnip usually strikes the tips of fingers, toes, ears, nose, and chin or cheeks. It is usually painless, and the victim is often unaware of it. The skin turns pale or white from first degree frostbite. Second degree frostbite can occur in skin and its underlying tissue. The skin becomes firm and white, waxy, or translucent. As the injured area warms, it will become numb, and then will turn blue or purple and swell. The superficial capillaries have been injured, and edema fluid will leak out into the tissue. Stinging and burning pain and superficial blisters may develop. The throbbing, aching, and burning may last for some weeks, and the body part may become permanently red and be extremely sensitive if again exposed to the cold. Third degree frostbite involves freezing not only the skin and subcutaneous tissue but even muscle and bone. This serious injury usually involves the hands and feet. The tissues are cold, pale, and frozen to the touch. The injured area usually turns purple or blue and is extremely painful after thawing. Large blisters and tissue death (gangrene) may occur within the first day or two.

Generalized, severe, progressive body cooling is known as systemic hypothermia. This may occur at outside temperatures above freezing as well as below freezing. It occurs when the core temperature of the body falls below 95° F (35° C) and results when the body temperature controlling mechanism is overwhelmed. At 96.8° F, the body attempts to compensate for the cold. As core temperatures fall below 95° F, the body is unable to rewarm itself without outside assistance because of the failure of the temperature control system.

Hypothermia may be of acute duration if someone is suddenly immersed in cold water. Subacute hypothermia may occur in otherwise healthy people, such as skiers, mountain climbers, or lost hunters, subject to prolonged cold exposure and physical exertion. Chronic hypothermia may occur in old people or those who are ill.

Hypothermia may be mild to moderate, when the core temperature is between 81° and 95° F and the patient is conscious, or it may be severe, when the core temperature is below 80° F and the patient is unconscious.

The symptoms of hypothermia depend on the core temperature and become progressively more severe as the core temperature drops. Between 95° and 98.6° F, the first symptom is shivering, a subconscious attempt of the body to generate more heat through muscular action. In addition, certain semiconscious activities will occur, such as stamping the foot and dancing up and down. Below 95° F, difficulty in speaking, incoordination, stumbling, falling, and an inability to use the hands are seen. It is at this point that the loss of temperature control occurs and the body is unable to rewarm itself. Below 90° F, shivering decreases and the muscles become progressively rigid. Below 85° F, the victim becomes irrational and may fall into a coma. The pulse and respirations slow. Below 80° F, unconsciousness occurs. The pulse is weaker, and cardiac arrhythmias may be noted. Below 78° F, the respiratory and cardiovascular centers fail, with resulting pulmonary edema and ventricular fibrillation and then cardiac standstill. Ventricular fibrillation is the usual cause of death in these victims.

Even without a thermometer, the level of hypothermia may be noted by observing the victim's mental state. With a few degrees' drop in core temperature, the victim may become withdrawn, discouraged, or mildly depressed. As the temperature drops a few degrees more, to 94° F or below, the victim may become indecisive, confused, or disoriented and may make incorrect decisions. Below 86° F, sleepiness, lethargy, and confusion are obvious. These progressively become more severe until coma occurs. The comatose state, if allowed to continue, results in death. The stages of hypothermia may progress rapidly after the victim's temperature falls below 90° F.

Trench foot or immersion foot occurs from the wet cooling of an extremity over hours or days at a temperature just above freezing while remaining relatively immobile. It used to be seen commonly in shipwrecked sailors or soldiers forced to remain in trenches for days at a time. The extremity is cold, swollen, waxy, mottled, and may be numb.

Preventive Work Guidelines

1. Exposure to cold will be terminated immediately when severe shivering becomes evident.
2. When air temperature falls below 30° F, dry bulb temperature and wind speed should be measured

periodically and the wind chill factor should be calculated. (Weather radios are an adequate substitute.)

3. All work except for emergencies will be terminated when the wind chill is below -18° F.

4. Metal tool handles should be covered with thermal insulating material at temperatures below 30° F.

5. When work is performed continuously in the cold at a wind chill of below 20° F, heated shelter should be made available. A vehicle can be used for shelter if it is kept idling with the heater on.

6. Work will be arranged in such a way that sitting or standing still for long periods of time is minimized.

7. Keep warm, dry, and keep moving, but do not become overheated while working in the cold. Exercise fingers and toes.

Appendix E - ESC Medical Monitoring Program

ESC Medical Monitoring Program

The workers most likely to be exposed to contaminated materials at the site are sampling and inspection personnel. These personnel are included in a Medical Monitoring Program established by ESC.

The purposes of the Medical Monitoring Program are to identify any illness or problem that would put an employee at an unusual risk from exposures; to ensure that each employee can use negative-pressure respirators safely and withstand heat or cold stress; and to establish and maintain a medical data base for employees to monitor any abnormalities that may be related to work exposure and that could increase injury risk for the employee or others in the performance of job functions. The Medical Monitoring Program includes:

- a baseline physical examination
- a medical determination of fitness of duty, including work restrictions after any job-related injury or illness or nonjob-related absence lasting more than three working days
- the review of each site-specific Health and Safety Plan and potential exposure list to determine the need for specific biological and medical monitoring
- annual and exit physical examinations with attention given to specific exposures or symptoms

Baseline Physical Examination

A baseline physical examination will be performed on each employee engaged in hazardous waste activities. The purposes of this examination are to identify any illness or problem that would put an employee at unusual risk from certain exposures; to certify the safe use of negative-pressure respirators (OSHA Safety and Health Standard 29 CFR 1910.134); and to develop a data base for the assessment of exposure-related events detected through periodic medical monitoring. Variable data, such as age, sex, race, smoking, prior employment and exposure history, that may have a bearing on the occurrence of subsequent events after employment begins will be gathered.

The content of the Baseline Physical Examination will include:

- medical, occupational, and fertility histories
- a physical examination, stressing neurological, cardiopulmonary, musculoskeletal, and skin systems
- an electrocardiogram

- PA and lateral chest x-rays
- a pulmonary function test (FEV1, FVC, FEV 25-75)
- an audiogram
- a multichemistry blood panel, including kidney and liver function tests, CBC with differential, and urinalysis
- tests deemed necessary by symptoms or exposure history
- a red blood cell cholinesterase
- physical parameters, including blood pressure and visual acuity testing

Annual Physical Examination

An examination and updated occupational history will be performed on an annual basis during the anniversary month of the baseline physical examination. This annual examination serves to identify and prevent illness caused by cumulative exposure to toxic substances.

The Annual Physical Examination will include:

- a personal work history (based on specific project histories)
- a physical examination, stressing neurological, cardiopulmonary, musculoskeletal, and skin systems
- pulmonary function test (FEV1, FVC, FEV 25-75)
- a multichemistry blood panel, including kidney and liver function test
- an audiogram
- tests deemed necessary by symptoms or exposure history
- an optional wellness profile

Return to Work Examination

Any job-related illness or injury will be followed by a medical examination to determine fitness for duty or possible job restrictions based on the physical findings of the medical examiner. A similar examination will be performed following three missed workdays caused by a nonjob-related illness or injury requiring medical intervention.

Exit Physical Examination

The content of the Exit Physical Examination will include:

- a personal work history (based on specific project histories)
- medical, exposure, and fertility histories
- a physical examination, stressing neurological, cardiopulmonary, musculoskeletal, and skin systems
- a pulmonary function test (FEV1, FVC, FEV 25-75)
- an electrocardiogram
- PA and lateral chest x-rays
- an audiogram
- a multichemistry blood panel, including kidney and liver function tests, CBC with differential, and urinalysis
- tests deemed necessary by symptoms or exposure history
- a red blood cell cholinesterase
- physical parameters, including blood pressure and visual acuity testing

Appendix F - Properties of Materials and Toxicological Profiles

Properties of Materials and Toxicological Profiles

Benzene

Benzene is a colorless liquid that is used as an industrial solvent and is a common component of gasoline and other petroleum derived fuels and oils. Although benzene can be absorbed through the gastrointestinal tract and slowly through the skin, most exposures occur by inhalation. Up to 50% of the benzene inhaled is absorbed. Benzene can accumulate in lipid tissues but also is metabolized and excreted readily. It appears that many of benzene's toxic properties are due to its metabolites.

Benzene can have a defatting action on the skin, causing irritation. Inhalation of 500 ppm can cause headaches, while 20,000 ppm can be fatal in 5-10 minutes. Acute inhalation exposure causes depression of the central nervous system with symptoms including drowsiness, vertigo, and delirium. Oral ingestion of 9-12 grams results in similar symptoms of toxicity and vomiting. Ingestion of about 30 grams can be fatal. The lowest reported ingested dose at which toxic effects were found in humans is 130 mg/kg. The LD_{50}s for oral exposure were 4,894 mg/kg for rats and 4,700 mg/kg for mice. For inhalation exposures, they were 10,000 ppm for rats and 9,980 ppm for mice. In September 1987, the OSHA TWA for benzene was reduced from 10 ppm to 1 ppm.

Chronic exposure to benzene can cause pronounced changes in the hematopoietic system (which manufactures blood cells), problems with the central nervous system, and cardiac sensitization. Hematological effects from chronic benzene exposure can include blood clotting defects, followed by a decrease in the blood cell production activity of the bone marrow, disturbances of iron metabolism, internal hemorrhaging, and a cessation of bone marrow activity and leukemia.

Benzene's leukemic action in humans is widely accepted. The IARC has classified the compound as a suspect human carcinogen, and the EPA carcinogen assessment group has determined that the 10^{-6} cancer risk level is 1.5 ug/l. As such, the EPA has set the recommended maximum contaminant level for benzene at zero.

While benzene has not been found to be a mutagen in laboratory tests, reproductive effects have been found. Exposed rats have shown a decrease in fertility and the number of offspring, and their offspring have displayed skeletal abnormalities.

The behavior of benzene in the environment varies. The compound is very volatile and highly flammable, with a flash point of 12° F. Benzene can be explosive at concentrations of 1.4-8.0% in air. Volatilized benzene will photodecompose. Benzene also is biodegraded readily in the soil. It is somewhat soluble in water (1,780 mg/l), so benzene will tend to travel with groundwater.

Gasoline

Gasoline is a mixture of more than 200 C_5-C_9 hydrocarbons. More than 325 organic and inorganic additives are added to gasoline. The gasoline itself consists largely of aromatics (35%-55% in premium grades) and alkanes. The aromatics present include benzene (4%), toluene (10%-16%), C_8 compounds (12%-18%), and higher aromatics (17%-20%). The additives include antiknock compounds, antioxidants, surfactants, and deposit modifiers. Tetraethyl lead was formerly one of the most common additives, occurring at about 77 ppm. Its use has been severely curtailed because of the severe decline in the use of leaded gasolines.

As would be expected from its composition, gasoline is a central nervous system depressant. Exposure to high levels can cause respiratory failure and sensitization of the heart muscles. The presence of benzene in gasoline means that chronic inhalation exposure can be carcinogenic. Inhalation of 900 ppm of gasoline for one hour by humans can cause dizziness and irritation of the eyes, nose, and throat. Inhalation of 2,000 ppm can cause irritation of the mucous membranes and anesthesia. At levels of 10,000 ppm, the response is rapid, occurring in two to four minutes. Ingestion of gasoline can cause upsets of the gastrointestinal system. If ingested gasoline is aspirated, it can damage the lungs, leading to pneumonitis. Ingestion of 10-15 grams can be lethal in children, while ingestion of 20-50 grams is toxic to adults. The threshold limit value for gasoline vapors has been set at 250-500 mg/cu m.

In the environment, gasoline will volatilize readily. As expected, it is fairly flammable, having a flash point of 100°-150° F. Gasoline can be biodegraded in the soil but may be persistent, floating on groundwater.

Methylene Chloride

Methylene chloride, also known as dichloromethane, is a highly volatile, colorless liquid. As such, most reported exposures to the compound are through inhalation. Methylene chloride can be an irritant of the skin, eyes, and mucous membranes. In addition to inhalation, it can be absorbed by ingestion or through the skin. In the body, methylene chloride is metabolized to carbon monoxide. This compound binds with the hemoglobin in the red blood cells forming carboxyhemoglobin, a form of the compound that is considerably less efficient at transporting oxygen.

The major effect from exposures to high concentrations of methylene chloride through inhalation is narcosis. Headaches, numbness, and tingling in the limbs also can result. The LD_{50} for oral exposure of rats is 2,524 mg/kg. Rats and mice exposed by inhalation showed LC_{50}s of 88,000 m/cu m for 30 minutes and 14,400 ppm for 7 hours. The National Institute of Occupational Safety and Health has established a time-weighted average for the compound of 75 ppm.

There is little evidence of severe damage from chronic exposure to methylene chloride. Damage to the liver and central nervous system has been reported from such exposures. The data regarding carcinogenicity are equivocal at present. The International Agency for Research on Cancer has classified the compound as an indefinite carcinogen. There is no evidence reported that the compound is carcinogenic in humans, and many laboratory studies have produced negative results. Methylene chloride has been found to be mutagenic in tests with bacterial systems. Inhalation exposures of pregnant rats and mice have resulted in developmental abnormalities of the muscles, skeleton, and urogenital system as well as effects on the behavior of the offspring.

Its high volatility means that methylene chloride does not persist in many environmental situations. It is somewhat soluble in water but dissolves at a limited rate. The compound readily evaporates from water bodies. In the air, methylene chloride photodecomposes.

Toluene

Toluene is a colorless liquid widely used as an industrial solvent. Toluene can be an irritant of the skin and eyes. Its defatting action on the skin leads to drying and cracking in chronic exposures. Toluene is readily absorbed dermally and by ingestion and inhalation. Most absorbed toluene is metabolized to benzoic acid, which is conjugated with glycine in the liver to form hippuric acid. The hippuric acid is excreted in the urine. Toluene is a central nervous system depressant. At concentrations of 200-500 ppm, headaches, lassitude, and impairment of coordination have been found. Acute poisoning from inhalation only occurs at very high concentrations and is reportedly very rare. The oral LD_{50} for rats was found to be 5 g/kg. For inhalation exposures of mice, it was 5,320 ppm for eight hours. An LD_{50} of 14 g/kg was found for dermal exposures of rabbits. The Occupational Safety and Health Administration time-weighted average for toluene is 200 ppm.

Toluene is not highly toxic in chronic exposures. Prolonged exposure has led to reversible kidney and liver damage. Chronic exposure also results in central nervous system depression. There is no evidence that toluene is

a carcinogen. There is some evidence of mutagenicity in microorganisms and cell cultures, but the evidence is reportedly equivocal. The compound can pass across the placenta, but there is no report of embryotoxic effects in humans. Inhalation exposures of pregnant mice have produced fetotoxicity and developmental abnormalities of the musculoskeletal system, and oral exposures of mice also have produced craniofacial abnormalities. Benzene, a frequent contaminant of commercial grade toluene, can cause more severe toxic effects.

Toluene is fairly volatile and will tend to evaporate from surficial soils and surface water bodies. The compound is insoluble but will tend to be mobile in saturated soils. Toluene can be biodegraded somewhat by soil microorganisms and will degrade photochemically in the atmosphere. Toluene has been classified by the U.S. Department of Transportation as a flammable liquid. It has a flash point of 40° F. The federal water quality criteria level for toluene has been set at 17,500 ug/l in fresh water. An acceptable daily intake of 29.5 mg/l has been established. The reportable quantity under CERCLA and the Clean Water Act for spills of toluene is 1,000 pounds.

Xylenes

Xylene solvent, as commercially sold, is a mixture of the three xylene isomers and usually contains ethyl benzene as a contaminant. Xylenes are absorbed most readily by inhalation; however, they also can be absorbed dermally and through ingestion. Much of the absorbed xylene is eliminated in the urine as toluric acid. The compounds have a high affinity for fat and, therefore, can accumulate in adipose tissues.

Xylenes can be irritating to the eyes, skin, nose, and mucous membranes. In high concentrations, severe breathing difficulties can result, leading to dizziness and unconsciousness. Loss of appetite, nausea, and abdominal pain have been reported from exposure as has reversible damage to the liver and kidneys. In laboratory animals, xylenes have been reported to be mildly toxic to the hematopoietic system, which is responsible for the production of red blood cells. The lowest lethal concentration reported for human inhalation exposure is 10,000 ppm for six hours. The LD_{50} for oral administration to the rat was reported as 4.3 g/kg and for inhalation exposure was 5.0 g/kg for four hours. The Occupational Safety and Health Administration time-weighted average is set at 100 ppm (435 mg/cu m).

Chronic exposure to xylenes can have a depressive effect on the central nervous system. Skin problems can result from frequent exposure because of the solvent's defatting action. There is apparently no evidence that xylenes are carcinogenic, teratogenic, or mutagenic. Inhalation exposures of pregnant rats produced developmental

abnormalities of the musculoskeletal system, while oral exposure of pregnant mice increased fetotoxicity and postimplementation mortality. No such effects have been reported for humans.

Xylenes are fairly volatile and flammable, having a flash point of about 100° F. They are insoluble in water and biodegrade slowly. Thus, they will be persistent in some environmental situations.

The long-term, suggested no-adverse-response level for exposure to xylenes has been set at 0.62 mg/l. The reportable quantity for spills under CERCLA is 1,000 pounds.

Appendix G - Site Health and Safety Coordinator Responsibilities

Site Health and Safety Coordinator Responsibilities

A Site Health and Safety Coordinator will be designated.

The responsibilities of the Site Health and Safety Coordinator will include the following:

- briefing personnel on the hazards at the site, the standard operating procedures to be employed, and emergency procedures
- conducting onsite health monitoring
- coordinating access control and site security
- monitoring work practices and decontamination to ensure that required procedures are being followed
- being available to document and respond to any concerns or complaints made by personnel onsite
- documenting unsafe work practices or conditions
- documenting any accidents or incidents that result in illness or injury to personnel
- evaluating and amending the Health and Safety Plan daily to remedy deficiencies and post entry briefings

Appendix H - Calibration Procedures for the HNu

Calibration Procedures for the HNu

The calibration of the HNu PID can be checked by using a cylinder containing isobutylene with a regulator as follows:

1. Connect the analyzer to the regulator and cylinder with a short piece (butt connection) of tubing. The calibration gas in the cylinder consists of a mixture of 100 ppm isobutylene and zero air. Isobutylene is nontoxic and safe to use in confined areas. There are no listed exposure levels at any concentration.

   The regulator sets and controls the flow rate of gas at a value preset at the factory. This will be about 250 cc/min.

   It is important for the tubing to be clean because contaminated tubing will affect the calibration reading. Do not use the cylinder below about 200 psi because readings below that level can deviate up to 10% from the rated value. Zero the unit on standby.

2. Open the valve on the cylinder until a steady reading is obtained. If a 10.2 eV lamp is being used, the unit should read 55 ppm. If an 11.7 eV lamp is being used, the reading should be 67 ppm.

3. If the analog display of the HNu is not the same as the proper calibration value, adjust the SPAN setting until the analog display shows the calibration value. The SPAN setting is adjusted by moving the locking hub in a counterclockwise direction to unlock it, rotating the SPAN control dial until the correct reading is obtained, and moving the locking hub back in a clockwise direction to lock it.

4. Turn off the cylinder, and remove the tubing connection from the end of the HNu probe. Keep the HNu on until the analog display reaches 1 ppm or less. This indicates that the calibration gas has been purged from the instrument.

5. Turn off the unit and record this new SPAN setting.

Appendix G - Boring Logs,
Well Construction Details, and Well Installation Permits

BORING LOG
Environmental Strategies Corporation
101 Metro Drive, Suite 650
San Jose, CA 95110

PROJECT
Grow Group Underground Storage Tank
1007 41st
Emeryville, California

Boring No. MWB2
Sheet 1 of 2
Date Drilled 5/24/93

Approved by:

Drilling Co. Bayland
Driller Gilbert
ESC Geologist R. Mark Armstrong

Boring Location MWB-2
Ground Elevation
TOC Elevation

Boring
Method Hollow Stem Auger
Hole Diameter 8-inch
Inside Diameter 4-inch
Total Depth 25 feet

Outer Casing
Type None
Diameter
Length

Well Casing/Screen/Filter Pack
Type/Diameter Sch 40/2-inch
Screen Length 20 feet
Screen Slot Size .020 Filter Pack 12/10
Total Depth 25 feet

Sampler
Method Cal. modified split spoon
Length (ft) 18-inch
Hammer (lbs)/Fall (ins) 140 lb/30 inch

Blows/Ft.	Sample Depth	Water Level Time & Date	Sample Time	PID (ppm)	Core Sample Number	Depth (ft)	Description	Graphic Log	Well Construction
10						1	Asphalt		
5	2	dry	8:30	1	S-2	2	Gravel Silt (ML) with sand, brown mottled tan, dry, medium stiff,		
6		dry				3	slight odor, gravels, poorly graded, coarse, sandy, medium grain size	ML/GM	
6	3 1/2	dry		5	S-3	4			
6	5	dry	9:00	8	S-5	5			
						6			
		dry				7	Grading to Silty Clay	ML	▼
						8			
		moist				9			▽
10		wet	9:15	15	S-10	10	Silty Gravel with sand trace clay, brown mottled green, wet medium dense, low plasticity, slight odor, coarse to fine gravels,	GM	
16	10 1/2					11	coarse to fine sands		
						12			
		wet		0		13	Grading to finer size particles	SP	
						14			
28		wet	9:20	0	S-15	15	Gravely Sand, Brown to tan, wet, dense, low plasticity fines, no odor, medium to fine sands, well rounded sands, fine gravels		
42	15 1/2					16			
						17			

I:\LOTUS\GROW\MWBW-1

BORING LOG
Environmental Strategies Corporation
101 Metro Drive, Suite 650
San Jose, CA 95110

PROJECT
Grow Group Underground Storage Tank
1004 41st
Emeryville, California

Boring No. MWB2
Sheet 2 of 2
Date Drilled 5/24/93

Approved by:

Blows/Ft.	Sample Depth	Water Level Time & Date	Sample Time	PID (ppm)	Core Sample Number	Depth (ft)	Description	Graphic Log	Well Construction
				0		18	(Flowing Silty Sands)		
6						19	Silty sand, brown to tan, wet, medium dense, low plasticity fines,		
21	20	wet	9:40	0	S-20	20	no odor, well rounded sands, trace fine gravels		
						21		SP	
						22			
				0		23		ML	
16						24	Clayey silt, brown to tan, wet, very stiff, no odor		
25	25	wet	11:00	0	S-25	25			
						26	Total Depth 25 Feet		
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			

I:\LOTUS\GROW\MWB2-2

BORING LOG
Environmental Strategies Corporation
101 Metro Drive, Suite 650
San Jose, CA 95110

PROJECT
Grow Group Underground Storage Tank
1007 41st
Emeryville, California

Boring No. MWB3
Sheet 1 of 2
Date Drilled 5/24/93

Approved by:

Drilling Co. Bayland
Driller Gilbert
ESC Geologist R. Mark Armstrong

Boring Location MWB-3
Ground Elevation
TOC Elevation

Boring
Method Hollow Stem Auger
Hole Diameter 8-inch
Inside Diameter 4-inch
Total Depth 25 feet

Outer Casing
Type None
Diameter
Length

Well Casing/Screen/Filter Pack
Type/Diameter Sch 40/2-inch
Screen Length 20 feet (5-25)
Screen Slot Size .020 Filter Pack 12/10
Total Depth 25 feet

Sampler
Method Cal. modified split spoon
Length (ft) 18-inch
Hammer (lbs)/Fall (ins) 140 lb/30 inch

Blows/Ft.	Sample Depth	Water Level Time & Date	Sample Time	PID (ppm)	Core Sample Number	Depth (ft)	Description	Graphic Log	Well Construction
						1	Asphalt		
8	2 1/2	dry	3:00	5		2			
						3	Gravely silt, brown mottled, tan, dry, medium stiff, slight odor	ML/ GM	
						4			
4	5 1/2	dry	3:17			5			
10				5		6			▼
						7			
		dry		8		8			
		moist				9			
21	10 1/2	wet	3:30	12		10		ML	▽
						11	Silty gravel, with sand, brown with green staining, wet, medium dense, low plasticity, coarse to fine sands	GM	
						12			
						13			
						14		SP	
31	15 1/2	wet	4:00	13		15	Gravely sand, brown to tan, wet, dense, low plasticity fines, medium to very fine sands		
						16			
						17			

I:\LOTUS\GROW\MWB3-1

BORING LOG
Environmental Strategies Corporation
101 Metro Drive, Suite 650
San Jose, CA 95110

PROJECT
Grow Group Underground Storage Tank
1007 41st
Emeryville, California

Boring No. MWB3
Sheet 2 of 2
Date Drilled 5/24/93

Approved by:

Blows/Ft.	Sample Depth	Water Level Time & Date	Sample Time	PID (ppm)	Core Sample Number	Depth (ft)	Description	Graphic Log	Well Construction
						18			
						19			
27	20	wet	4:15	0	S-20	20	*Silty sand*, brown to tan, wet, medium dense, low plasticity fines, no odor, well rounded sands	SP	
				0		21			
						22			
12						23		ML	
26	25	wet	5:00	0	S-25	24	Clayey silt, Brown to tan, wet, very stiff, no odor		
						25	Total Depth 25 Feet		
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			

I:\LOTUS\GROW\MWB3-2

BORING LOG
Environmental Strategies Corporation
101 Metro Drive, Suite 650
San Jose, CA 95110

PROJECT
Grow Group Underground Storage Tank
1007 41st
Emeryville, California

Boring No. MWB-4
Sheet 1 of 2
Date Drilled 5/24/93

Approved by:

Drilling Co. Bayland
Driller Gilbert
ESC Geologist R. Mark Armstrong

Boring Location MWB-4
Ground Elevation
TOC Elevation

Boring
Method Hollow Stem Auger
Hole Diameter 8-inch
Inside Diameter 4-inch
Total Depth 25 feet

Outer Casing
Type None
Diameter
Length

Well Casing/Screen/Filter Pack
Type/Diameter Sch 40/2-inch
Screen Length 20 feet
Screen Slot Size .020 Filter Pack 12/10
Total Depth 25 feet

Sampler
Method split spoon sampler
Length (ft) 18-inch
Hammer (lbs)/Fall (ins) 140 lb/30 inch

Blows/Ft	Sample Depth	Water Level Time & Date	Sample Time	PID (ppm)	Core Sample Number	Depth (ft)	Description	Graphic Log	Well Construction
						1	Asphalt		
7	2 1/2	dry	7:00	5	S-2 1/2	2	Gravely silt, brown and tan, dry, medium stiff, slight odor, coarse gravel	ML	
						3			
						4			
3	5	dry	7:05	26	S-5	5			
11						6			
						7			▼
		moist				8			
						9			
20	10	wet	7:30	12	S-10	10			▽
						11	Silty gravel, brown to tan, wet, medium dense, low plasticity fines, slight odor	GM	
						12			
						13			
						14			
27	15	wet	7:40	0	S-15	15	Gravely sand, brown to light tan, dense, low plasticity silts, medium to very fine sand with silt	SP	
						16			
						17			

I:\LOTUS\GROW\MWB4-1

BORING LOG
Environmental Strategies Corporation
101 Metro Drive, Suite 650
San Jose, CA 95110

PROJECT
Grow Group Underground Storage Tank
1007 41st
Emeryville, California

Boring No. MWB-4
Sheet 2 of 2
Date Drilled 5/24/93

Approved by:

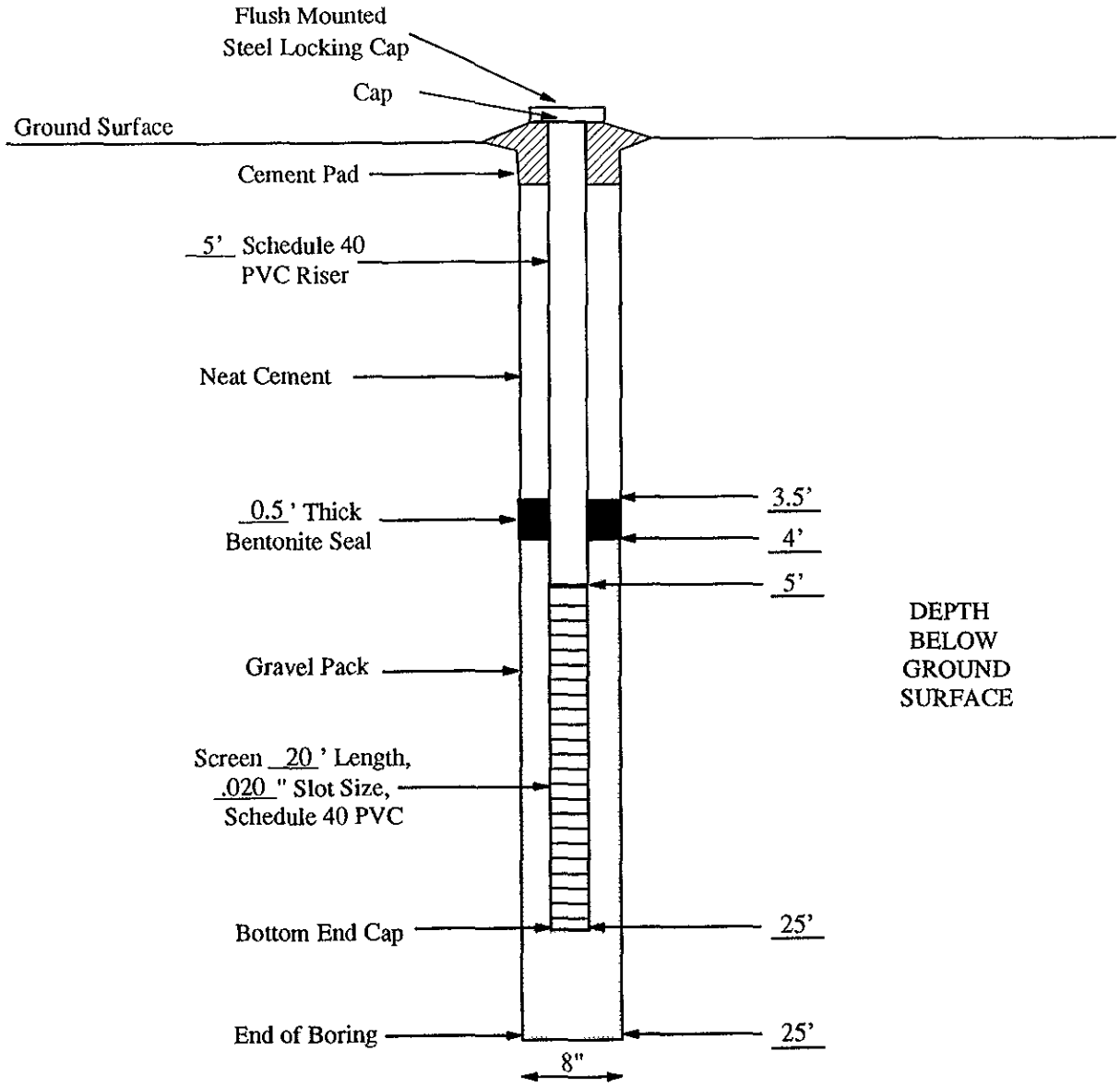
Blows/Ft.	Sample Depth	Water Level Time & Date	Sample Time	PID (ppm)	Core Sample Number	Depth (ft)	Description	Graphic Log	Well Construction
						18	(Flowing Sands)		
						19	Silty sand, brown to tan, wet, medium dense, low plasticity fines, no odor, well rounded sand		
20	20	wet	7:55	0	S-20	20		SP	
						21			
						22		ML	
						23			
						24	Clayey silt, brown to tan, wet, very stiff, no odor		
25	25	wet	8:00	0	S-25	25			
						26	Total Depth 25 Feet		
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			

I:\LOTUS\GROW\MWB4-2

SITE NAME: Emeryville Underground Storage Tank

LOCATION: 41st Street

DATE: 5/24/93



AS-BUILT DIAGRAM FOR WELL MWB2

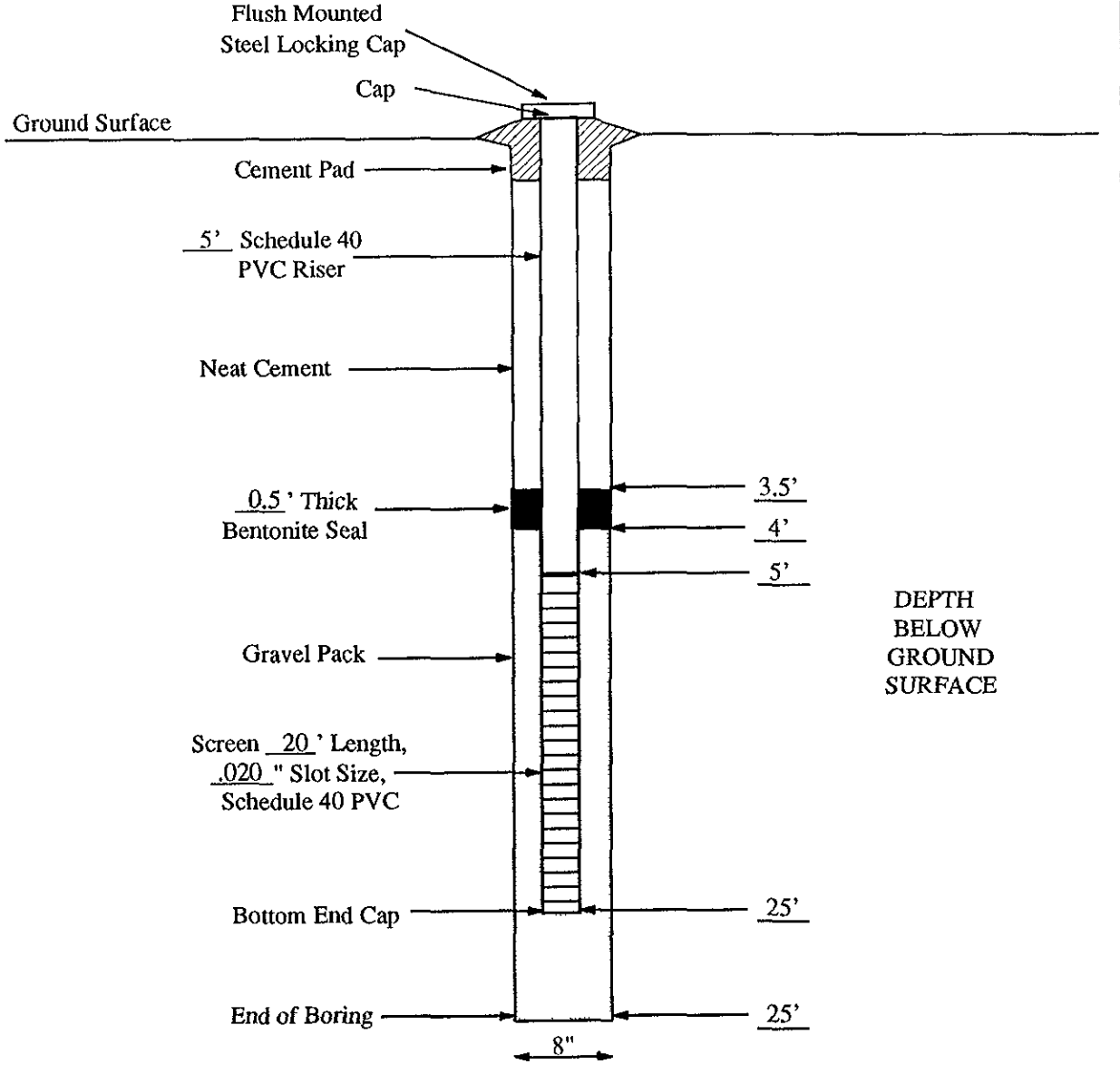
ENVIRONMENTAL STRATEGIES CORP.
11911 Freedom Drive Suite 900
Reston, Virginia 22090
703-709-6500

I:\LOTUS\GROW\MWB2DIAG

SITE NAME: Emeryville Underground Storage Tank

LOCATION: 41st Street

DATE: 5/24/93



AS-BUILT DIAGRAM FOR WELL MWB3

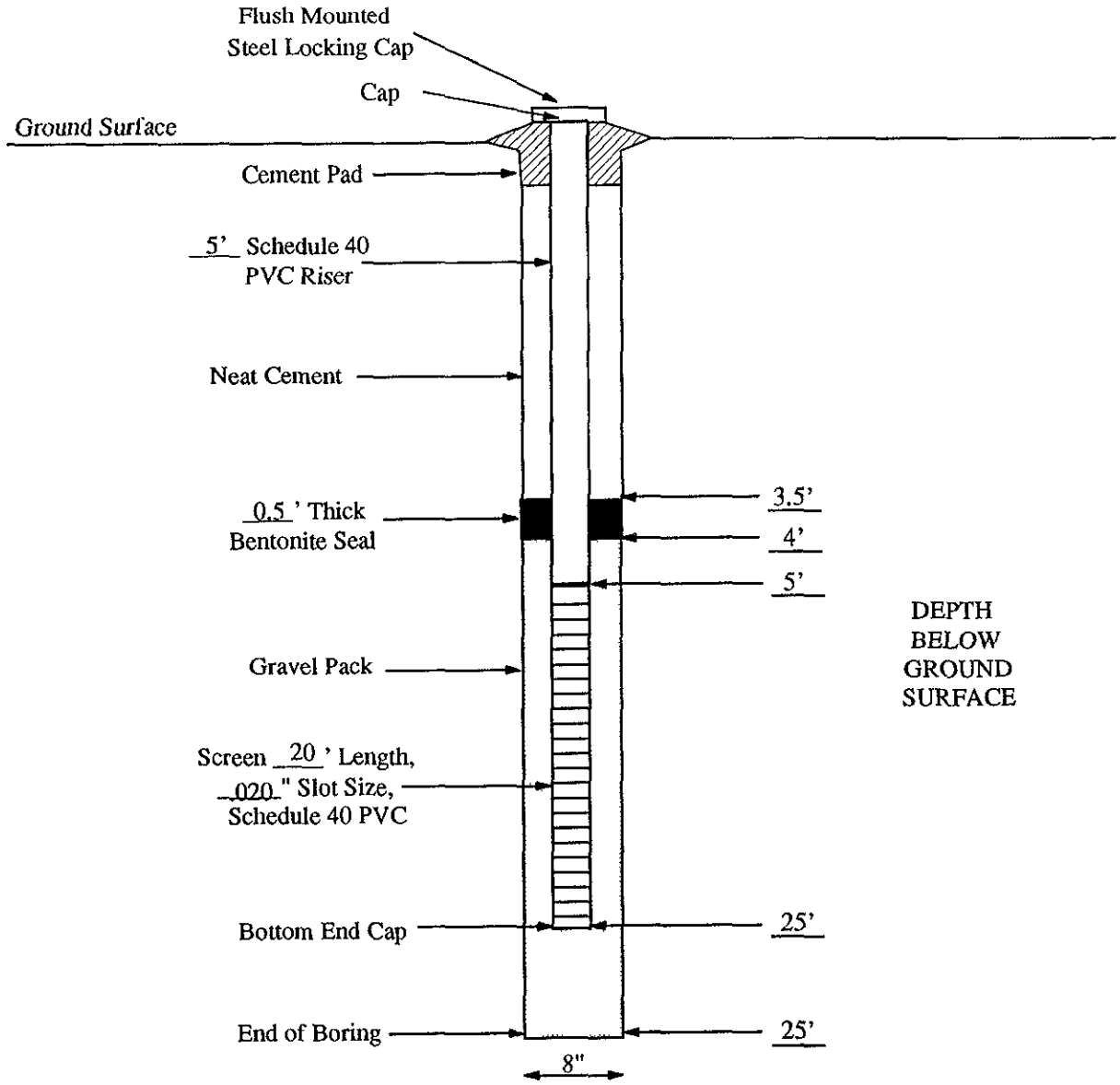
ENVIRONMENTAL STRATEGIES CORP.
11911 Freedom Drive Suite 900
Reston, Virginia 22090
703-709-6500

L\LOTUS\GROW\MWB3DIAG

SITE NAME: Emeryville Underground Storage Tank

LOCATION: 41st Street

DATE: 5/24/93



AS-BUILT DIAGRAM FOR WELL MWB4

ENVIRONMENTAL STRATEGIES CORP.
11911 Freedom Drive Suite 900
Reston, Virginia 22090
703-709-6500

I:\LOTUS\GROWA\MWB4DIAG

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94588 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 1007 41st Street
Emeryville, California

CLIENT
Name Grow Group, Inc.
Address 4000 Dupont Cr. Phone
City Louisville KY Zip 40207

APPLICANT
Name ENVIRONMENTAL STRATEGIES CORPORATION
Address 101 Metro Dr. Phone (408) 453-6100
City San Jose CA Zip 95110

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection		General	
Water Supply		Contamination	XX
Monitoring	XX	Well Destruction	

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger XX
Cable ___ Other ___

DRILLER'S LICENSE NO. 610487

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 4 in. Depth 25 ft.
Surface Seal Depth 5 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings 3 Maximum
Hole Diameter 8 in. Depth 20 ft.

ESTIMATED STARTING DATE 4-15-93
ESTIMATED COMPLETION DATE 4-17-93

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE ___ Date ___

FOR OFFICE USE

PERMIT NUMBER 93187
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. *Minimum surface seal thickness* is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(C.) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 14 Apr 93
Wyman Hong

121989

Appendix H - Well Coordinates and Survey Map

HMH, Incorporated
Civil Engineers • Planners • Surveyors

James T. Harper
William J. Wagner, R.C.E

June 24, 1993
Job No. 2246-00-00
Sheet 1 of 2

WELL ELEVATIONS
6800 ROBERTSON AVENUE
NEWARK, CALIFORNIA

WELL DESIGNATION	COORDINATES	ELEVATION	REMARKS
MW-1	N=4914.94 E=5067.64	53.89	Top P.V.C.
MW-2	N=4957.52 E=5034.79	54.06	Top P.V.C.
MW-B1	N=5055.72 E=4722.57	49.92	Top P.V.C.
MW-B2	N=5043.37 E=4775.07	50.77	Top P.V.C.
MW-B3	N=5028.58 E=4698.64	49.02	Top P.V.C.
MW-B4	N=5044.23 E=4737.10	49.74	Top P.V.C.
MW-D1	N=5010.88 E=4683.66	49.35	Top P.V.C.
MW-D2	N=5012.05 E=4817.04	50.56	Top P.V.C.
MW-LD4	N=5068.59 E=4806.77	51.51	Top P.V.C.

1353 Oakland Road P.O. Box 611510, San Jose, CA 95161-1510 408/294-3232 Fax: 408/298-3812

June 24, 1993
Job No. 2246-00-00
Sheet 2 of 2

Bench Mark: Top of P.V.C. at MW #2 at corner of Linden Street and 41st Street

Elevation: 54.06

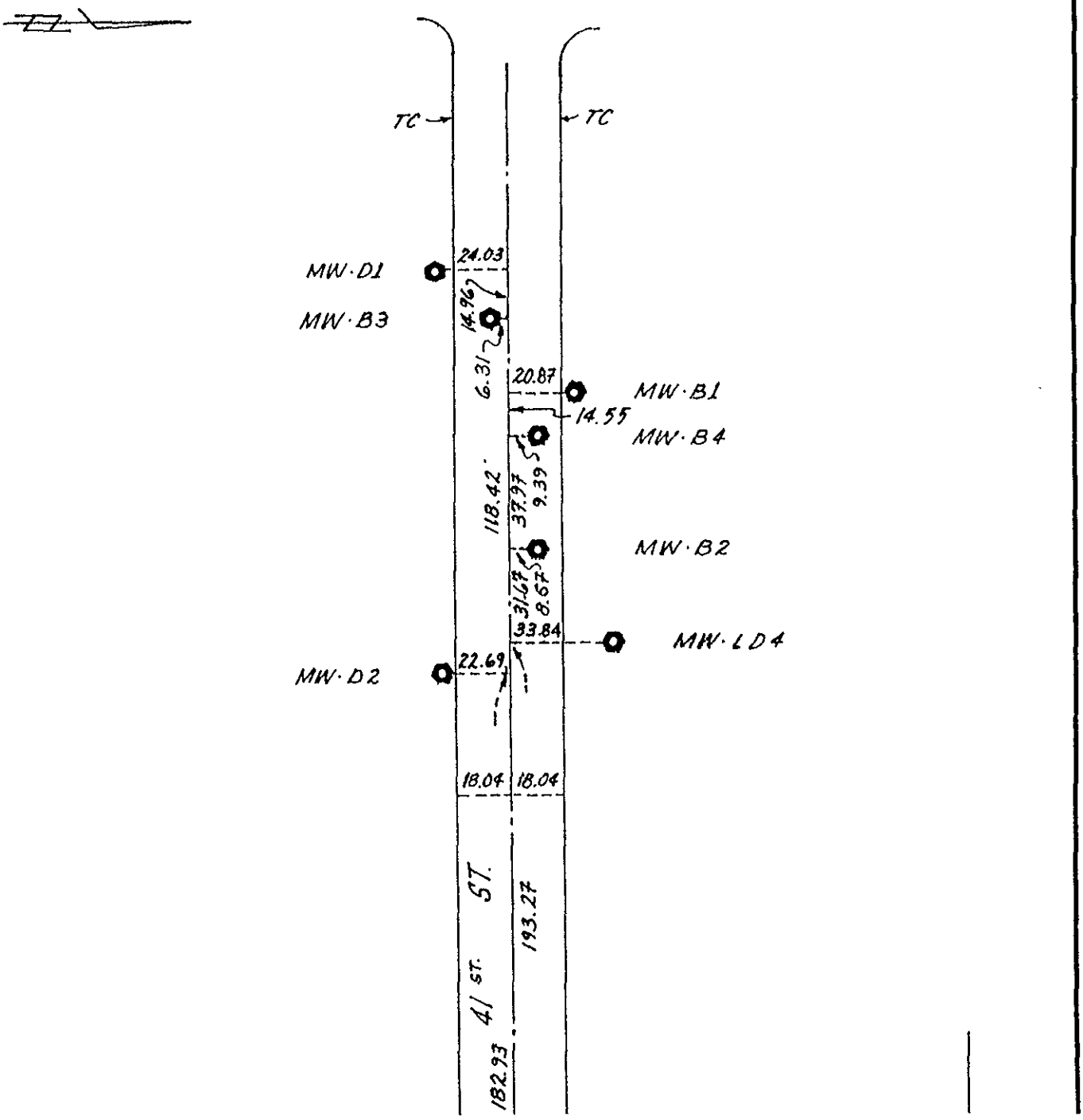
Basis of Bearing:

Assumed North

Monument Well with pin in concrete	N=5000.00 E=5000.00

NOTE: Well elevations were obtained by a field survey dated 6/10/93.

SMM:cs/2246-00.wel


TC
TC
MW·D1
24.03
14.96
MW·B3
6.31
20.87
MW·B1
14.55
MW·B4
118.42'
37.97
9.39
MW·B2
31.47
8.67
33.84
MW·LD4
MW·D2
22.69
18.04
18.04
41 ST.
ST.
193.27
182.93

Appendix I - Supplemental Soil Investigation Analytical Reports

CA0821

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported:	Jun 3, 1993
Attention: Bob Bealkowski	First Sample #:	3EB3501		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3EB3501 S-3.5-MWB2	Sample I.D. BLK052793 Method Blank	Sample I.D. 3EB3502 S-5-MWB2	Sample I.D. 3EB3503 S-10-MWB2	Sample I.D. 3EB3504 S-2.5-MWB3	Sample I.D. 3EB3505 S-5-MWB3
Purgeable Hydrocarbons	1.0	N.D.	N.D.	160	56	7.1	N.D.
Chromatogram Pattern:		--	--	Non-Gas Mix > C6	Non-Gas Mix & Gas	Non-Gas Mix > C8	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	20	2.5	1.0	1.0
Date Analyzed:	5/27/93	5/27/93	5/31/93	5/28/93	6/1/93	6/1/93
Instrument Identification:	GCHP-17	GCHP-17	GCHP-7	GCHP-17	GCHP-17	GCHP-7
Surrogate Recovery: (QC Limits = 70-130%)	112	112	92	105	83	82

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

Please Note:
cc: Dave Blaushild, Environmental Strategies, 4 Penn Center West, Pittsburg, PA 15276

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported:	Jun 3, 1993
Attention: Bob Bealkowski	First Sample #:	3EB3506		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3EB3506 S-10-MWB3	Sample I.D. 3EB3506 S-10-MWB3 Duplicate	Sample I.D. 3EB3507 S-2.5-MWB4	Sample I.D. 3EB3508 S-5-MWB4	Sample I.D. 3EB3509 S-10-MWB4	Sample I.D.
Purgeable Hydrocarbons	1.0	840	1,200	2.0	120	310	
Chromatogram Pattern:		Non-Gas Mix > C8	Non-Gas Mix > C8	Non-Gas Mix > C6	Non-Gas Mix > C8	Non-Gas Mix > C6	

Quality Control Data

Report Limit Multiplication Factor:	100	100	1.0	100	20
Date Analyzed:	6/1/93	6/1/93	6/1/93	6/1/93	5/31/93
Instrument Identification:	GCHP-7	GCHP-7	GCHP-7	GCHP-7	GCHP-7
Surrogate Recovery: (QC Limits = 70-130%)	86	86	89	90	310

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Malle A. Springer
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 3550/8015	Reported:	Jun 3, 1993
Attention: Bob Bealkowski	First Sample #:	3EB3501		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3EB3501 S-3.5-MWB2	Sample I.D. BLK052793 Method Blank	Sample I.D. 3EB3502 S-5-MWB2	Sample I.D. 3EB3503 S-10-MWB2	Sample I.D. 3EB3504 S-2.5-MWB3	Sample I.D. 3EB3505 S-5-MWB3
Extractable Hydrocarbons	1.0	7.1	N.D.	24	2.2	N.D.	N.D.
Chromatogram Pattern:		Non-Diesel Mix C9-C12+ > C18	--	Non-Diesel Mix < C12 + Discrete Peaks	Non-Diesel Mix < C12 + Discrete Peaks	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	5/27/93	5/27/93	5/27/93	5/27/93	5/27/93	5/27/93
Date Analyzed:	5/28/93	5/27/93	5/28/93	5/28/93	5/28/93	5/28/93
Instrument Identification:	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Soil	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 3550/8015	Reported:	Jun 3, 1993
Attention: Bob Bealkowski	First Sample #:	3EB3506		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3EB3506 S-10-MWB3	Sample I.D. 3EB3506 S-10-MWB3 Duplicate	Sample I.D. 3EB3507 S-2.5-MWB4	Sample I.D. 3EB3508 S-5-MWB4	Sample I.D. 3EB3509 S-10-MWB4	Sample I.D.
Extractable Hydrocarbons	1.0	220	110	5.4	23	9.1	
Chromatogram Pattern:		Non-Diesel Mix < C12	Non-Diesel Mix < C12	Non-Diesel Mix < C11	Non-Diesel Mix < C12	Non-Diesel Mix < C12	

Quality Control Data

Report Limit Multiplication Factor:	10	10	1.0	5.0	1.0
Date Extracted:	5/27/93	5/27/93	5/27/93	5/27/93	5/27/93
Date Analyzed:	5/28/93	5/28/93	5/28/93	5/28/93	5/28/93
Instrument Identification:	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-3.5-MWB2	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3501	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-5-MWB2	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3502	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	830	N.D.
Benzene	170	N.D.
Bromodichloromethane	170	N.D.
Bromoform	170	N.D.
Bromomethane	170	N.D.
2-Butanone	830	N.D.
Carbon disulfide	170	N.D.
Carbon tetrachloride	170	N.D.
Chlorobenzene	170	N.D.
Chloroethane	170	N.D.
2-Chloroethyl vinyl ether	830	N.D.
Chloroform	170	N.D.
Chloromethane	170	N.D.
Dibromochloromethane	170	N.D.
1,1-Dichloroethane	170	N.D.
1,2-Dichloroethane	170	N.D.
1,1-Dichloroethene	170	N.D.
cis-1,2-Dichloroethene	170	N.D.
trans-1,2-Dichloroethene	170	N.D.
1,2-Dichloropropane	170	N.D.
cis-1,3-Dichloropropene	170	N.D.
trans-1,3-Dichloropropene	170	N.D.
Ethylbenzene	170	N.D.
2-Hexanone	830	N.D.
Methylene chloride	420	N.D.
4-Methyl-2-pentanone	830	N.D.
Styrene	170	N.D.
1,1,2,2-Tetrachloroethane	170	N.D.
Tetrachloroethene	170	N.D.
Toluene	170	N.D.
1,1,1-Trichloroethane	170	N.D.
1,1,2-Trichloroethane	170	N.D.
Trichloroethene	170	N.D.
Trichlorofluoromethane	170	N.D.
Vinyl acetate	170	N.D.
Vinyl chloride	170	N.D.
Total Xylenes	170	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-10-MWB2	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3503	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-2.5-MWB3	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3504	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-5-MWB3	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3505	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	5,000	N.D.
Benzene	1,000	N.D.
Bromodichloromethane	1,000	N.D.
Bromoform	1,000	N.D.
Bromomethane	1,000	N.D.
2-Butanone	5,000	N.D.
Carbon disulfide	1,000	N.D.
Carbon tetrachloride	1,000	N.D.
Chlorobenzene	1,000	N.D.
Chloroethane	1,000	N.D.
2-Chloroethyl vinyl ether	5,000	N.D.
Chloroform	1,000	N.D.
Chloromethane	1,000	N.D.
Dibromochloromethane	1,000	N.D.
1,1-Dichloroethane	1,000	N.D.
1,2-Dichloroethane	1,000	N.D.
1,1-Dichloroethene	1,000	N.D.
cis-1,2-Dichloroethene	1,000	N.D.
trans-1,2-Dichloroethene	1,000	N.D.
1,2-Dichloropropane	1,000	N.D.
cis-1,3-Dichloropropene	1,000	N.D.
trans-1,3-Dichloropropene	1,000	N.D.
Ethylbenzene	1,000	N.D.
2-Hexanone	5,000	N.D.
Methylene chloride	2,500	N.D.
4-Methyl-2-pentanone	5,000	N.D.
Styrene	1,000	N.D.
1,1,2,2-Tetrachloroethane	1,000	N.D.
Tetrachloroethene	1,000	N.D.
Toluene	1,000	N.D.
1,1,1-Trichloroethane	1,000	N.D.
1,1,2-Trichloroethane	1,000	N.D.
Trichloroethene	1,000	N.D.
Trichlorofluoromethane	1,000	N.D.
Vinyl acetate	1,000	N.D.
Vinyl chloride	1,000	N.D.
Total Xylenes	1,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, S-10-MWB3	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3506	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	5,000	N.D.
Benzene	1,000	N.D.
Bromodichloromethane	1,000	N.D.
Bromoform	1,000	N.D.
Bromomethane	1,000	N.D.
2-Butanone	5,000	N.D.
Carbon disulfide	1,000	N.D.
Carbon tetrachloride	1,000	N.D.
Chlorobenzene	1,000	N.D.
Chloroethane	1,000	N.D.
2-Chloroethyl vinyl ether	5,000	N.D.
Chloroform	1,000	N.D.
Chloromethane	1,000	N.D.
Dibromochloromethane	1,000	N.D.
1,1-Dichloroethane	1,000	N.D.
1,2-Dichloroethane	1,000	N.D.
1,1-Dichloroethene	1,000	N.D.
cis-1,2-Dichloroethene	1,000	N.D.
trans-1,2-Dichloroethene	1,000	N.D.
1,2-Dichloropropane	1,000	N.D.
cis-1,3-Dichloropropene	1,000	N.D.
trans-1,3-Dichloropropene	1,000	N.D.
Ethylbenzene	1,000	N.D.
2-Hexanone	5,000	N.D.
Methylene chloride	2,500	N.D.
4-Methyl-2-pentanone	5,000	N.D.
Styrene	1,000	N.D.
1,1,2,2-Tetrachloroethane	1,000	N.D.
Tetrachloroethene	1,000	N.D.
Toluene	1,000	N.D.
1,1,1-Trichloroethane	1,000	N.D.
1,1,2-Trichloroethane	1,000	N.D.
Trichloroethene	1,000	N.D.
Trichlorofluoromethane	1,000	N.D.
Vinyl acetate	1,000	N.D.
Vinyl chloride	1,000	N.D.
Total Xylenes	1,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, S-10-MWB3, Duplicate	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3506	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	5,000	N.D.
Benzene	1,000	N.D.
Bromodichloromethane	1,000	N.D.
Bromoform	1,000	N.D.
Bromomethane	1,000	N.D.
2-Butanone	5,000	N.D.
Carbon disulfide	1,000	N.D.
Carbon tetrachloride	1,000	N.D.
Chlorobenzene	1,000	N.D.
Chloroethane	1,000	N.D.
2-Chloroethyl vinyl ether	5,000	N.D.
Chloroform	1,000	N.D.
Chloromethane	1,000	N.D.
Dibromochloromethane	1,000	N.D.
1,1-Dichloroethane	1,000	N.D.
1,2-Dichloroethane	1,000	N.D.
1,1-Dichloroethene	1,000	N.D.
cis-1,2-Dichloroethene	1,000	N.D.
trans-1,2-Dichloroethene	1,000	N.D.
1,2-Dichloropropane	1,000	N.D.
cis-1,3-Dichloropropene	1,000	N.D.
trans-1,3-Dichloropropene	1,000	N.D.
Ethylbenzene	1,000	N.D.
2-Hexanone	5,000	N.D.
Methylene chloride	2,500	N.D.
4-Methyl-2-pentanone	5,000	N.D.
Styrene	1,000	N.D.
1,1,2,2-Tetrachloroethane	1,000	N.D.
Tetrachloroethene	1,000	N.D.
Toluene	1,000	N.D.
1,1,1-Trichloroethane	1,000	N.D.
1,1,2-Trichloroethane	1,000	N.D.
Trichloroethene	1,000	N.D.
Trichlorofluoromethane	1,000	N.D.
Vinyl acetate	1,000	N.D.
Vinyl chloride	1,000	N.D.
Total Xylenes	1,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Date 6-4-93

Report # 2CB3501

Number of pages (including cover page) 21

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-2.5-MWB4	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3507	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Malie A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-5-MWB4	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3508	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	1,300	N.D.
Benzene	250	N.D.
Bromodichloromethane	250	N.D.
Bromoform	250	N.D.
Bromomethane	250	N.D.
2-Butanone	1,300	N.D.
Carbon disulfide	250	N.D.
Carbon tetrachloride	250	N.D.
Chlorobenzene	250	N.D.
Chloroethane	250	N.D.
2-Chloroethyl vinyl ether	1,300	N.D.
Chloroform	250	N.D.
Chloromethane	250	N.D.
Dibromochloromethane	250	N.D.
1,1-Dichloroethane	250	N.D.
1,2-Dichloroethane	250	N.D.
1,1-Dichloroethene	250	N.D.
cis-1,2-Dichloroethene	250	N.D.
trans-1,2-Dichloroethene	250	N.D.
1,2-Dichloropropane	250	N.D.
cis-1,3-Dichloropropene	250	N.D.
trans-1,3-Dichloropropene	250	N.D.
Ethylbenzene	250	N.D.
2-Hexanone	1,300	N.D.
Methylene chloride	630	N.D.
4-Methyl-2-pentanone	1,300	N.D.
Styrene	250	N.D.
1,1,2,2-Tetrachloroethane	250	N.D.
Tetrachloroethene	250	N.D.
Toluene	250	N.D.
1,1,1-Trichloroethane	250	N.D.
1,1,2-Trichloroethane	250	N.D.
Trichloroethene	250	N.D.
Trichlorofluoromethane	250	N.D.
Vinyl acetate	250	N.D.
Vinyl chloride	250	N.D.
Total Xylenes	250	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Project Manager

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	May 24, 1993
101 Metro Dr., Suite 650	Sample Descript:	Soil, S-10-MWB4	Received:	May 25, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 2, 1993
Attention: Bob Bealkowski	Lab Number:	3EB3509	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	1,000	N.D.
Benzene	200	N.D.
Bromodichloromethane	200	N.D.
Bromoform	200	N.D.
Bromomethane	200	N.D.
2-Butanone	1,000	N.D.
Carbon disulfide	200	N.D.
Carbon tetrachloride	200	N.D.
Chlorobenzene	200	N.D.
Chloroethane	200	N.D.
2-Chloroethyl vinyl ether	1,000	N.D.
Chloroform	200	N.D.
Chloromethane	200	N.D.
Dibromochloromethane	200	N.D.
1,1-Dichloroethane	200	N.D.
1,2-Dichloroethane	200	N.D.
1,1-Dichloroethene	200	N.D.
cis-1,2-Dichloroethene	200	N.D.
trans-1,2-Dichloroethene	200	N.D.
1,2-Dichloropropane	200	N.D.
cis-1,3-Dichloropropene	200	N.D.
trans-1,3-Dichloropropene	200	N.D.
Ethylbenzene	200	N.D.
2-Hexanone	1,000	N.D.
Methylene chloride	500	N.D.
4-Methyl-2-pentanone	1,000	N.D.
Styrene	200	N.D.
1,1,2,2-Tetrachloroethane	200	N.D.
Tetrachloroethene	200	N.D.
Toluene	200	N.D.
1,1,1-Trichloroethane	200	N.D.
1,1,2-Trichloroethane	200	N.D.
Trichloroethene	200	N.D.
Trichlorofluoromethane	200	N.D.
Vinyl acetate	200	N.D.
Vinyl chloride	200	N.D.
Total Xylenes	200	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Soil	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK060193	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821-04	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Soil	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 1, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK060193	Reported:	Jun 3, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

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680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA821-04
Method: EPA 8240
QC Sample #: 3EB3501 - 06

Reported: Jun 3, 1993

QUALITY CONTROL DATA REPORT: SURROGATE RECOVERIES, EPA 8240

Surrogate	Percent Recovery, 3EB3501 S-3.5-MWB2	Percent Recovery, 3EB3502 S-5-MWB2	Percent Recovery, 3EB3503 S-10-MWB2	Percent Recovery, 3EB3504 S-2.5-MWB3	Percent Recovery, 3EB3505 S-5-MWB3	Percent Recovery, 3EB3506 S-10-MWB3	Percent Recovery, 3EB3506 S-10-MWB3 Duplicate
1,2-Dichloro-ethane-d4	95	86	95	88	79	85	82
Toluene-d8	90	86	91	87	86	95	88
Bromofluoro-benzene	86	92	93	94	82	109	112

SEQUOIA ANALYTICAL

Malle A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA821-04
101 Metro Dr., Sulte 650	Method:	EPA 8240
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample #:	3EB3507 - 09

Reported: Jun 3, 1993

QUALITY CONTROL DATA REPORT: SURROGATE RECOVERIES, EPA 8240

Surrogate	Percent Recovery, 3EB3507 S-2.5-MWB4	Percent Recovery, 3EB3508 S-5-MWB4	Percent Recovery, 3EB3509 S-10-MWB4	Percent Recovery,	Percent Recovery,	Percent Recovery,	Percent Recovery,
1,2-Dichloro-ethane-d4	77	99	88				
Toluene-d8	82	99	96				
Bromofluoro-benzene	83	111	106				

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Project Manager

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(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA821-04
Matrix: Soil
QC Sample Group: 3EB3501 -09

Reported: Jun 3, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	A.Maralit	A.Maralit	A.Maralit	A.Maralit	E.Cunanan
Conc. Spiked:	20	20	20	60	15
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK052793	GBLK052793	GBLK052793	GBLK052793	DBLK052793
Date Prepared:	5/27/93	5/27/93	5/27/93	5/27/93	5/27/93
Date Analyzed:	5/27/93	5/27/93	5/27/93	5/27/93	5/27/93
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17	GCHP-5
LCS % Recovery:	105	100	95	95	78
Control Limits:	60-140	60-140	60-140	60-140	50-150
MS/MSD Batch #:	G394801	G394801	G394801	G394801	3EB0901
Date Prepared:	5/27/93	5/27/93	5/27/93	5/27/93	5/27/93
Date Analyzed:	5/27/93	5/27/93	5/27/93	5/27/93	5/27/93
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17	GCHP-5
Matrix Spike % Recovery:	100	95	95	93	0.0
Matrix Spike Duplicate % Recovery:	85	80	80	78	81
Relative % Difference:	16	17	17	18	200

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA821-04
Matrix: Soil
QC Sample Group: 3EB3501 -09

Reported: Jun 3, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-*ethene*	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	M.Williams	M.Williams	M.Williams	M.Williams	M.Williams
Conc. Spiked:	2500	2500	2500	2500	2500
Units:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LCS Batch#:	BLK060193	BLK060193	BLK060193	BLK060193	BLK060193
Date Prepared:	6/1/93	6/1/93	6/1/93	6/1/93	6/1/93
Date Analyzed:	6/1/93	6/1/93	6/1/93	6/1/93	6/1/93
Instrument I.D.#:	F2	F2	F2	F2	F2
LCS % Recovery:	104	88	88	92	96
Control Limits:	59-172	62-137	66-142	59-139	60-133
MS/MSD Batch #:	3EB3501	3EB3501	3EB3501	3EB3501	3EB3501
Date Prepared:	6/1/93	6/1/93	6/1/93	6/1/93	6/1/93
Date Analyzed:	6/1/93	6/1/93	6/1/93	6/1/93	6/1/93
Instrument I.D.#:	F2	F2	F2	F2	F2
Matrix Spike % Recovery:	88	76	80	84	84
Matrix Spike Duplicate % Recovery:	84	80	80	84	84
Relative % Difference:	4.7	5.1	0.0	0.0	0.0

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

Appendix J - Well Sampling Logs

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MWB-1 Job / task # CA821/04 Sampled By SSD/BBB

Sample Type VOCs TPH dg Site Name GRAN GROUP - EMERYVILLE Date 6/10/93

Sample Method bailer (dedicated)

Field Conditions clear, cool, 70°F

Water Level Information

Measuring Point TOC Instrument Used Solinist W.L. for 80% recovery

W.L. Before Purge 6.14 W.L. After purge W.L. Time of Sample

Time 0900 Time Date Time

Purge Information

Purge Start

Well Depth 19.88 Screened Interval Purge Device bailer

Well Dia. 2" Purge Calculation (19.88-6.14) 0.49 = 6.7 gal Actual Amt. Removed 7 gal

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
4.0	0.65	1.96	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate	X	200
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
0940	6.5 gal	68.4	1084	6.88		Strong odor / sheen
						floating product

Sample Time 0945

Sample / Lab Information

Laboratory name and Location :

Analysis	Container(s)	No.	Volume	Preservative	Filtration
VOCs	VOA	3 2	40 ml	HCl	No
TPHd	amber	1	1 liter		No
TPHg	VOA	2	40 ml	HCl	No

Decon. Information

Purge Device(s) / Equipment decon'd bailer

Sampling Device(s) / Equipment disposable bailer

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MWB-2 | Job / task # CA821/04 | Sampled By SSP

Sample Type | Site Name GROW GROUP | Date 6/10/93

Sample Method bailer (dedicated)

Field Conditions clear, warm, windy

Water Level Information

Measuring Point TOC | Instrument Used SOLINIST | W.L. for 80% recovery

W.L. Before Purge 6.75 | W.L. After purge | W.L. Time of Sample

Time 1425 | Time | Date | Time

Purge Information

Purge Start 1430

Well Depth 23.35 | Screened Interval | Purge Device bailer

Well Dia. 2" | Purge Calculation 8.2 gal | Actual Amt. Removed 9 gal

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
4.0	0.65	1.96	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
1450	8.5	69.6	614	8.4		silty

Sample Time 1450

Sample / Lab Information

Laboratory name and Location :

Analysis	Container(s)	No.	Volume	Preservative	Filtration
VOCs	VOA 40ml	3	40ml	HCL	no
TPHd	amber	1	1L		no
TPHg	VOA 40ml	2	40ml		no

Decon. Information

Purge Device(s) / Equipment: Decon Bailer

Sampling Device(s) / Equipment

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MWB-3 Job / task # CA821/04 Sampled By SSD

Sample Type _____ Site Name CARBON GROUP Date 6/10/93

Sample Method bailer (dedicated)

Field Conditions clear, warm, 70's

Water Level Information

Measuring Point TOC Instrument Used SOLINIST W.L. for 80% recovery _____

W.L. Before Purge 6.85 W.L. After purge _____ W.L. Time of Sample _____

Time 1100 Time _____ Date _____ Time _____

Purge Information

Purge Start _____

Well Depth 20.88 Screened Interval _____ Purge Device bailer

Well Dia. 2" Purge Calculation 6.8 gal Actual Amt. Removed 8 gal

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
4.0	0.65	1.96	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		EQUIP
EQUIP ~~Field~~ blank	X	~~FIELD~~ BLANK (EB)
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
1120	8 gal	69.3	857	7.65		very silty

Sample Time 1125

Sample / Lab Information

Laboratory name and Location : _____

Analysis	Container(s)	No.	Volume	Preservative	Filtration

Decon. Information

Purge Device(s) / Equipment: decon'ed bailer

Sampling Device(s) / Equipment: _____

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MWB-4 | Job / task # CA821/04 | Sampled By SSD

Sample Type | Site Name GROW GROUP | Date 6/10/93

Sample Method bailer (dedicated)

Field Conditions clear, warm, high 70's

Water Level Information

Measuring Point TOC | Instrument Used SOLINIST | W.L. for 80% recovery

W.L. Before Purge 6.00 | W.L. After purge | W.L. Time of Sample

Time 1330 | Time | Date | Time

Purge Information

Purge Start 1335

Well Depth 21.5 | Screened Interval | Purge Device bailer

Well Dia. 2" | Purge Calculation 7.60 gal | Actual Amt. Removed 10 gal

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
4.0	0.65	1.96	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
1405	9 gal	77.7	835	6.96		

Sample Time 1400

Sample / Lab Information

Laboratory name and Location :

Analysis	Container(s)	No.	Volume	Preservative	Filtration

Decon. Information

Purge Device(s) / Equipment: decon'd bailer

Sampling Device(s) / Equipment:

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MWD-1 Job / task # CA0821-04 Sampled By BB

Sample Type _____ Site Name Dunne (grau group) Emeryville Date 6-10-93

Sample Method Bail

Field Conditions Clear, windy 70°F

Water Level Information

Measuring Point TOC Instrument Used Soloinst W.L. for 80% recovery _____

W.L. Before Purge 5.29 W.L. After purge _____ W.L. Time of Sample _____

Time _____ Time _____ Date _____ Time _____

Purge Information

Purge Start _____

Well Depth 12.50 Screened Interval _____ Purge Device bailer

Well Dia. 4" Purge Calculation (12.5 - 5.29) 1.96 = 14.1 Actual Amt. Removed 14.1 gal

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
4.0	0.65	(1.96)	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
	14.1	68.5	7.14	8.23		

Sample Time 1530

Sample / Lab Information

Laboratory name and Location : _____

Analysis	Container(s)	No.	Volume	Preservative	Filtration

Decon. Information

Purge Device(s) / Equipment: decon'd bailer

Sampling Device(s) / Equipment: _____

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MW D-2 | Job / task # CA0821-04 | Sampled By BB

Sample Type | Site Name Brownfields Dunne (Emeryville) | Date 6-10-93

Sample Method Bail

Field Conditions Clear, windy, 75°F

Water Level Information

Measuring Point TOC | Instrument Used Solinst | W.L. for 80% recovery

W.L. Before Purge 6.25' | W.L. After purge | W.L. Time of Sample

Time 1426 | Time | Date | Time

Purge Information

Purge Start 1428

Well Depth 12.55' | Screened Interval ? | Purge Device bailer

Well Dia. 4" | Purge Calculation (12.55-6.25)1.96 = 12.3 | Actual Amt. Removed 13

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
(4.0)	0.65	(1.96)	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
1440	12.3	71.4	720	8.01		Sl Hy grey

Sample Time 1442

Sample / Lab Information

Laboratory name and Location :

Analysis	Container(s)	No.	Volume	Preservative	Filtration

Decon. Information

Purge Device(s) / Equipment: decon bailer

Sampling Device(s) / Equipment:

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MW-1 | Job / task # CA0821-04 | Sampled By BB

Sample Type | Site Name Cal Linen (Grow Group) | Date 6-10-93

Sample Method Bail

Field Conditions Clear, warm 80°F

Water Level Information

Measuring Point TOC | Instrument Used Solinst | W.L. for 80% recovery

W.L. Before Purge 7.41 | W.L. After purge | W.L. Time of Sample

Time | Time | Date 6-10-93 Time 1112

Purge Information

Purge Start 1115

Well Depth 22 | Screened Interval | Purge Device bail

Well Dia. 4" | Purge Calculation (22 - 7.41) 1.96 = 28.6 | Actual Amt. Removed 28

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
4.0	0.65	1.96	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
1159	~~Bail~~ 28.6	70.1	984	7.23		

Sample Time 1200

Sample / Lab Information

Laboratory name and Location :

Analysis	Container(s)	No.	Volume	Preservative	Filtration

Decon. Information

Purge Device(s) / Equipment: decon'd bailer

Sampling Device(s) / Equipment:

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. MW-2 | Job / task # CA0821-04 | Sampled By BB

Sample Type | Site Name Cal Linen (Grow Group) | Date 6-10-93

Sample Method Bail

Field Conditions clear, Warm, 80° F

Water Level Information

Measuring Point TOC | Instrument Used Solinst | W.L. for 80% recovery

W.L. Before Purge 9.24 | W.L. After purge | W.L. Time of Sample

Time | Time | Date 6-10-93 Time

Purge Information

Purge Start 1135

Well Depth 22.6 | Screened Interval (22.6-9.24) 1.96 = 26.2 | Purge Device B.I

Well Dia. 4" | Purge Calculation (22.6 - 9.24) 1.96 = 26.2 | Actual Amt. Removed 26g.l

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casng Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	1.10	1.84
3.5	0.50	1.50	2.50
4.0	0.65	(1.96)	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
1219	26.2	70°	1010	7.23		

Sample Time 1220

Sample / Lab Information

Laboratory name and Location :

Analysis	Container(s)	No.	Volume	Preservative	Filtration

Decon. Information

Purge Device(s) / Equipment Decon'd bailer

Sampling Device(s) / Equipment

Environmental Strategies Corporation

Water Sampling Form

Sample Desig. LD-4 | Job / task # CA0821-04 | Sampled By BB

Sample Type | Site Name Emeryville ONE (Bldg Group) | Date 6-10-93

Sample Method Bail

Field Conditions Clear warm 80°F

Water Level Information

Measuring Point TOC | Instrument Used Solinst | W.L. for 80% recovery

W.L. Before Purge 6.98 | W.L. After purge | W.L. Time of Sample

Time | Time | Date | Time

Purge Information

Purge Start 1345

Well Depth 10.6 | Screened Interval (10.6 - 6.98) 1.96 = 7.264 | Purge Device Bailer

Well Dia. 4" | Purge Calculation | Actual Amt. Removed 7.25 gal

(well depth-depth to water) X # of casing Vol. = Purge Vol.

Purge Volume Multipliers

Casing Dia.	1 Casing Vol.	3 Casing Vol.	5 Casing Vol.
1.0	0.04	0.12	0.20
2.0	0.16	0.49	0.82
3.0	0.37	~~1.10~~	1.84
3.5	0.50	1.50	2.50
4.0	0.65	1.96	3.26
4.5	0.83	2.48	4.13
6.0	1.47	4.41	7.34
8.0	2.61	7.83	13.06
10.0	4.08	12.24	20.40

QA/QC Information

	X if Present	Designation
Trip blank		
Duplicate		
Field blank		
Q.C. Spike		
Other		

Parameter Readings/Notes

Time	Amt. remv'd	Temp.	Cond.	pH	Turb.	Observations/Notes
1358	7.25 gal	70°	1005	7.86		

Sample Time 1400

Sample / Lab Information

Laboratory name and Location :

Analysis	Container(s)	No.	Volume	Preservative	Filtration

Decon. Information

Purge Device(s) / Equipment Bailer

Sampling Device(s) / Equipment

Appendix K - Supplemental Groundwater Investigation Analytical Reports

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MWB-1	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57401	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	130	N.D.
Benzene	26	N.D.
Bromodichloromethane	26	N.D.
Bromoform	26	N.D.
Bromomethane	26	N.D.
2-Butanone	130	N.D.
Carbon disulfide	26	N.D.
Carbon tetrachloride	26	N.D.
Chlorobenzene	26	N.D.
Chloroethane	26	N.D.
2-Chloroethyl vinyl ether	130	N.D.
Chloroform	26	N.D.
Chloromethane	26	N.D.
Dibromochloromethane	26	N.D.
1,1-Dichloroethane	26	N.D.
1,2-Dichloroethane	26	N.D.
1,1-Dichloroethene	26	N.D.
cis-1,2-Dichloroethene	26	N.D.
trans-1,2-Dichloroethene	26	N.D.
1,2-Dichloropropane	26	N.D.
cis-1,3-Dichloropropene	26	N.D.
trans-1,3-Dichloropropene	26	N.D.
Ethylbenzene	26	N.D.
2-Hexanone	130	N.D.
Methylene chloride	65	N.D.
4-Methyl-2-pentanone	130	N.D.
Styrene	26	N.D.
1,1,2,2-Tetrachloroethane	26	N.D.
Tetrachloroethene	26	N.D.
Toluene	26	N.D.
1,1,1-Trichloroethane	26	N.D.
1,1,2-Trichloroethane	26	N.D.
Trichloroethene	26	N.D.
Trichlorofluoromethane	26	N.D.
Vinyl acetate	26	N.D.
Vinyl chloride	26	N.D.
Total Xylenes	26	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Christine Middleton

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MWB-2	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F574-02	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	25	N.D.
Benzene	5.0	N.D.
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	5.0	N.D.
2-Butanone	25	N.D.
Carbon disulfide	5.0	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	5.0	N.D.
2-Chloroethyl vinyl ether	25	N.D.
Chloroform	5.0	N.D.
Chloromethane	5.0	N.D.
Dibromochloromethane	5.0	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	5.0	N.D.
cis-1,2-Dichloroethene	5.0	N.D.
trans-1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Ethylbenzene	5.0	N.D.
2-Hexanone	25	N.D.
Methylene chloride	13	N.D.
4-Methyl-2-pentanone	25	N.D.
Styrene	5.0	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	5.0	N.D.
Toluene	5.0	N.D.
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	5.0	N.D.
Trichlorofluoromethane	5.0	N.D.
Vinyl acetate	5.0	N.D.
Vinyl chloride	5.0	N.D.
Total Xylenes	5.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MWB-3	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57403	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MWB-4	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57404	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	71	N.D.
Benzene	14	N.D.
Bromodichloromethane	14	N.D.
Bromoform	14	N.D.
Bromomethane	14	N.D.
2-Butanone	71	N.D.
Carbon disulfide	14	N.D.
Carbon tetrachloride	14	N.D.
Chlorobenzene	14	N.D.
Chloroethane	14	N.D.
2-Chloroethyl vinyl ether	71	N.D.
Chloroform	14	N.D.
Chloromethane	14	N.D.
Dibromochloromethane	14	N.D.
1,1-Dichloroethane	14	N.D.
1,2-Dichloroethane	14	N.D.
1,1-Dichloroethene	14	N.D.
cis-1,2-Dichloroethene	14	N.D.
trans-1,2-Dichloroethene	14	N.D.
1,2-Dichloropropane	14	N.D.
cis-1,3-Dichloropropene	14	N.D.
trans-1,3-Dichloropropene	14	N.D.
Ethylbenzene	14	N.D.
2-Hexanone	71	N.D.
Methylene chloride	36	N.D.
4-Methyl-2-pentanone	71	N.D.
Styrene	14	N.D.
1,1,2,2-Tetrachloroethane	14	N.D.
Tetrachloroethene	14	N.D.
Toluene	14	N.D.
1,1,1-Trichloroethane	14	N.D.
1,1,2-Trichloroethane	14	N.D.
Trichloroethene	14	N.D.
Trichlorofluoromethane	14	N.D.
Vinyl acetate	14	N.D.
Vinyl chloride	14	N.D.
Total Xylenes	14	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MWD-1	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57405	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MWD-2	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57406	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	17	N.D.
Benzene	3.3	N.D.
Bromodichloromethane	3.3	N.D.
Bromoform	3.3	N.D.
Bromomethane	3.3	N.D.
2-Butanone	17	N.D.
Carbon disulfide	3.3	N.D.
Carbon tetrachloride	3.3	N.D.
Chlorobenzene	3.3	N.D.
Chloroethane	3.3	N.D.
2-Chloroethyl vinyl ether	17	N.D.
Chloroform	3.3	N.D.
Chloromethane	3.3	N.D.
Dibromochloromethane	3.3	N.D.
1,1-Dichloroethane	3.3	N.D.
1,2-Dichloroethane	3.3	N.D.
1,1-Dichloroethene	3.3	N.D.
cis-1,2-Dichloroethene	3.3	N.D.
trans-1,2-Dichloroethene	3.3	N.D.
1,2-Dichloropropane	3.3	N.D.
cis-1,3-Dichloropropene	3.3	N.D.
trans-1,3-Dichloropropene	3.3	N.D.
Ethylbenzene	3.3	N.D.
2-Hexanone	17	N.D.
Methylene chloride	8.3	N.D.
4-Methyl-2-pentanone	17	N.D.
Styrene	3.3	N.D.
1,1,2,2-Tetrachloroethane	3.3	N.D.
Tetrachloroethene	3.3	N.D.
Toluene	3.3	N.D.
1,1,1-Trichloroethane	3.3	N.D.
1,1,2-Trichloroethane	3.3	N.D.
Trichloroethene	3.3	N.D.
Trichlorofluoromethane	3.3	N.D.
Vinyl acetate	3.3	N.D.
Vinyl chloride	3.3	N.D.
Total Xylenes	3.3	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MW-1	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57407	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	400	N.D.
Benzene	80	6,700
Bromodichloromethane	80	N.D.
Bromoform	80	N.D.
Bromomethane	80	N.D.
2-Butanone	400	N.D.
Carbon disulfide	80	N.D.
Carbon tetrachloride	80	N.D.
Chlorobenzene	80	N.D.
Chloroethane	80	N.D.
2-Chloroethyl vinyl ether	400	N.D.
Chloroform	80	N.D.
Chloromethane	80	N.D.
Dibromochloromethane	80	N.D.
1,1-Dichloroethane	80	N.D.
1,2-Dichloroethane	80	N.D.
1,1-Dichloroethene	80	N.D.
cis-1,2-Dichloroethene	80	N.D.
trans-1,2-Dichloroethene	80	N.D.
1,2-Dichloropropane	80	N.D.
cis-1,3-Dichloropropene	80	N.D.
trans-1,3-Dichloropropene	80	N.D.
Ethylbenzene	80	1,600
2-Hexanone	400	N.D.
Methylene chloride	200	N.D.
4-Methyl-2-pentanone	400	N.D.
Styrene	80	N.D.
1,1,2,2-Tetrachloroethane	80	N.D.
Tetrachloroethene	80	N.D.
Toluene	80	3,700
1,1,1-Trichloroethane	80	N.D.
1,1,2-Trichloroethane	80	N.D.
Trichloroethene	80	N.D.
Trichlorofluoromethane	80	N.D.
Vinyl acetate	80	N.D.
Vinyl chloride	80	N.D.
Total Xylenes	80	6,500

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, MW-2	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57408	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, LD-4	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	3F57409	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	17	N.D.
Benzene	3.3	N.D.
Bromodichloromethane	3.3	N.D.
Bromoform	3.3	N.D.
Bromomethane	3.3	N.D.
2-Butanone	17	N.D.
Carbon disulfide	3.3	N.D.
Carbon tetrachloride	3.3	N.D.
Chlorobenzene	3.3	N.D.
Chloroethane	3.3	N.D.
2-Chloroethyl vinyl ether	17	N.D.
Chloroform	3.3	N.D.
Chloromethane	3.3	N.D.
Dibromochloromethane	3.3	N.D.
1,1-Dichloroethane	3.3	N.D.
1,2-Dichloroethane	3.3	N.D.
1,1-Dichloroethene	3.3	N.D.
cis-1,2-Dichloroethene	3.3	N.D.
trans-1,2-Dichloroethene	3.3	N.D.
1,2-Dichloropropane	3.3	N.D.
cis-1,3-Dichloropropene	3.3	N.D.
trans-1,3-Dichloropropene	3.3	N.D.
Ethylbenzene	3.3	N.D.
2-Hexanone	17	N.D.
Methylene chloride	8.3	N.D.
4-Methyl-2-pentanone	17	N.D.
Styrene	3.3	N.D.
1,1,2,2-Tetrachloroethane	3.3	N.D.
Tetrachloroethene	3.3	N.D.
Toluene	3.3	N.D.
1,1,1-Trichloroethane	3.3	N.D.
1,1,2-Trichloroethane	3.3	N.D.
Trichloroethene	3.3	N.D.
Trichlorofluoromethane	3.3	N.D.
Vinyl acetate	3.3	N.D.
Vinyl chloride	3.3	N.D.
Total Xylenes	3.3	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, Trip Blank	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 14, 1993
Attention: Bob Bealkowski	Lab Number:	3F57410	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, EB	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 14, 1993
Attention: Bob Bealkowski	Lab Number:	3F57411	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Descript:	Water, 200	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 18, 1993
Attention: Bob Bealkowski	Lab Number:	3F57412	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	63	N.D.
Benzene	13	N.D.
Bromodichloromethane	13	N.D.
Bromoform	13	N.D.
Bromomethane	13	N.D.
2-Butanone	63	N.D.
Carbon disulfide	13	N.D.
Carbon tetrachloride	13	N.D.
Chlorobenzene	13	N.D.
Chloroethane	13	N.D.
2-Chloroethyl vinyl ether	63	N.D.
Chloroform	13	N.D.
Chloromethane	13	N.D.
Dibromochloromethane	13	N.D.
1,1-Dichloroethane	13	N.D.
1,2-Dichloroethane	13	N.D.
1,1-Dichloroethene	13	N.D.
cis-1,2-Dichloroethene	13	N.D.
trans-1,2-Dichloroethene	13	N.D.
1,2-Dichloropropane	13	N.D.
cis-1,3-Dichloropropene	13	N.D.
trans-1,3-Dichloropropene	13	N.D.
Ethylbenzene	13	N.D.
2-Hexanone	63	N.D.
Methylene chloride	31	N.D.
4-Methyl-2-pentanone	63	N.D.
Styrene	13	N.D.
1,1,2,2-Tetrachloroethane	13	N.D.
Tetrachloroethene	13	N.D.
Toluene	13	N.D.
1,1,1-Trichloroethane	13	N.D.
1,1,2-Trichloroethane	13	N.D.
Trichloroethene	13	N.D.
Trichlorofluoromethane	13	N.D.
Vinyl acetate	13	N.D.
Vinyl chloride	13	N.D.
Total Xylenes	13	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled: Jun 10, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received: Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported: Jun 25, 1993
Attention: Bob Bealkowski	First Sample #:	3F57401	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3F57401 MWB-1	Sample I.D. 3F57402 MWB-2	Sample I.D. 3F57403 MWB-3	Sample I.D. 3F57404 MWB-4	Sample I.D. 3F57405 MWD-1	Sample I.D. 3F57406 MWD-2
Purgeable Hydrocarbons	50	57,000	1,400	510	36,000	230	6,200
Chromatogram Pattern:		Non-Gas > C8	Non-Gas > C8	Non-Gas > C8	Non-Gas > C8	Non-Gas > C8	Non-Gas > C8

Quality Control Data

Report Limit Multiplication Factor:	50	10	4.0	20	1.0	100
Date Analyzed:	6/16/93	6/15/93	6/15/93	6/15/93	6/15/93	6/14/93
Instrument Identification:	GCHP-2	GCHP-3	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Surrogate Recovery: (QC Limits = 70-130%)	100	98	93	99	97	97

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	Jun 10, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received:	Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported:	Jun 25, 1993
Attention: Bob Bealkowski	First Sample #:	3F57407		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3F57407 MW-1	Sample I.D. 3F57408 MW-2	Sample I.D. 3F57409 LD-4	Sample I.D. 3F57411 EB	Sample I.D. 3F57412 200	Sample I.D.
Purgeable Hydrocarbons	50	38,000	N.D.	1,100	N.D.	14,000	
Chromatogram Pattern:		Gas	--	Non-Gas > C8	--	Non-Gas > C8	

Quality Control Data

Report Limit Multiplication Factor:	100	1.0	10	1.0	20
Date Analyzed:	6/16/93	6/14/93	6/16/93	6/14/93	6/16/93
Instrument Identification:	GCHP-3	GCHP-3	GCHP-3	GCHP-3	GCHP-2
Surrogate Recovery: (QC Limits = 70-130%)	120	90	111	83	101

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled: Jun 10, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received: Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 3510/3520/8015	Reported: Jun 25, 1993
Attention: Bob Bealkowski	First Sample #:	3F57401	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3F57401 MWB-1	Sample I.D. 3F57402 MWB-2	Sample I.D. 3F57403 MWB-3	Sample I.D. 3F57404 MWB-4	Sample I.D. 3F57405 MWD-1	Sample I.D. 3F57406 MWD-2
Extractable Hydrocarbons	50	27,000	3,800	1,700	36,000	220	9,100
Chromatogram Pattern:		Non-Diesel Mix < C13	Non-Diesel Mix	Non-Diesel Mix < C13	Non-Diesel Mix < C14	Non-Diesel Mix < C15	Non-Diesel Mix < C12

Quality Control Data

Report Limit Multiplication Factor:	50	5.0	5.0	20	1.0	20
Date Extracted:	6/15/93	6/15/93	6/15/93	6/15/93	6/15/93	6/15/93
Date Analyzed:	6/17/93	6/17/93	6/17/93	6/17/93	5/16/93	6/17/93
Instrument Identification:	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled: Jun 10, 1993
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received: Jun 11, 1993
San Jose, CA 95110	Analysis Method:	EPA 3510/3520/8015	Reported: Jun 25, 1993
Attention: Bob Bealkowski	First Sample #:	3F57407	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3F57407 MW-1	Sample I.D. 3F57408 MW-2	Sample I.D. 3F57409 LD-4	Sample I.D. 3F57411 EB	Sample I.D. 3F57412 200	Sample I.D.
Extractable Hydrocarbons	50	11,000	N.D.	21,000	N.D.	20,000	
Chromatogram Pattern:		Non-Diesel Mix < C13	Discrete Peaks	Non-Diesel Mix < C14	--	Non-Diesel Mix < C14	

Quality Control Data

Report Limit Multiplication Factor:	10	1.0	10	1.0	10
Date Extracted:	6/15/93	6/15/93	6/15/93	6/15/93	6/15/93
Date Analyzed:	6/17/93	6/16/93	6/17/93	6/17/93	6/17/93
Instrument Identification:	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Water, Method Blank	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 14, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK061493	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Water, Method Blank	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK061593	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Water, Method Blank	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 15, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK061593	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Water, Method Blank	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 14, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK061593	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Water, Method Blank	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 14, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK061493	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Water, Method Blank	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 14, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK061493	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Christine Middleton

Malle A. Springer
Project Manager

3F57401.EEE <22>

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Descript:	Water, Method Blank	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Jun 18, 1993
Attention: Bob Bealkowski	Lab Number:	VBLK061893	Reported:	Jun 25, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	N.D.
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	N.D.
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Christine Middleton

Malle A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled: N.A.
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received: N.A.
San Jose, CA 95110	Analysis Method:	EPA 5030/8015	Reported: Jun 25, 1993
Attention: Bob Bealkowski	First Sample #:	GBLK061693	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. GBLK061693	Sample I.D. GBLK061593	Sample I.D. GBLK061193	Sample I.D. GBLK061493	Sample I.D. GBLK061693	Sample I.D.
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.	N.D.	
Chromatogram Pattern:		--	--	--	--	--	

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	6/16/93	6/15/93	6/15/93	6/14/93	6/16/93
Instrument Identification:	GCHP-2	GCHP-3	GCHP-3	GCHP-3	GCHP-3

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group	Sampled:	N.A.
101 Metro Dr., Suite 650	Sample Matrix:	Water	Received:	N.A.
San Jose, CA 95110	Analysis Method:	EPA 3510/3520/8015	Reported:	Jun 25, 1993
Attention: Bob Bealkowski	First Sample #:	DBLK061593		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. DBLK061593 Method Blank	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Extractable Hydrocarbons	50	N.D.					
Chromatogram Pattern:		- -					

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	6/15/93
Date Analyzed:	6/17/93
Instrument Identification:	GCHP-1

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group
101 Metro Dr., Suite 650	Method:	EPA 8240
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample #:	3F57401 - 07

Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT: SURROGATE RECOVERIES, EPA 8240

Surrogate	Percent Recovery, 3F57401 MWB-1	Percent Recovery, 3F57402 MWB-2	Percent Recovery, 3F57403 MWB-3	Percent Recovery, 3F57404 MWB-4	Percent Recovery, 3F57405 MWD-1	Percent Recovery, 3F57406 MWD-2	Percent Recovery, 3F57407 MW-1
1,2-Dichloro-ethane-d4	101	111	103	103	99	97	102
Toluene-d8	107	102	103	104	104	104	103
Bromofluoro-benzene	112	101	98	112	105	108	105

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group
101 Metro Dr., Suite 650	Method:	EPA 8240
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample #:	3F57408 - 12

Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT: SURROGATE RECOVERIES, EPA 8240

Surrogate	Percent Recovery, 3F57408 MW-2	Percent Recovery, 3F57409 LD-4	Percent Recovery, 3F57410 Trip Blank	Percent Recovery, 3F57411 EB	Percent Recovery, 3F57412 200	Percent Recovery,	Percent Recovery,
1,2-Dichloro-ethane-d4	97	96	101	97	101		
Toluene-d8	101	102	100	104	102		
Bromofluoro-benzene	101	103	96	97	105		

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA821/04, Grow Group
Matrix: Water
QC Sample Group: 3F57401 , 05, 08

Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	M.Williams	M.Williams	M.Williams	M.Williams	M.Williams
Conc. Spiked:	50	50	50	50	50
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK061593	BLK061593	BLK061593	BLK061593	BLK061593
Date Prepared:	-	-	-	-	-
Date Analyzed:	6/15/93	6/15/93	6/15/93	6/15/93	6/15/93
Instrument I.D.#:	MSHP-6	MSHP-6	MSHP-6	MSHP-6	MSHP-6
LCS % Recovery:	96	96	100	98	98
Control Limits:	61-145	71-120	76-127	76-125	75-130
MS/MSD Batch #:	3F57502	3F57502	3F57502	3F57502	3F57502
Date Prepared:	-	-	-	-	-
Date Analyzed:	6/15/93	6/15/93	6/15/93	6/15/93	6/15/93
Instrument I.D.#:	GCHP-6	GCHP-6	GCHP-6	GCHP-6	GCHP-6
Matrix Spike % Recovery:	98	94	96	98	96
Matrix Spike Duplicate % Recovery:	96	94	96	100	96
Relative % Difference:	2.1	0.0	0.0	2.0	0.0

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA821/04, Grow Group
Matrix: Water
QC Sample Group: 3F57410 - 11

Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	S.Hoffman	S.Hoffman	S.Hoffman	S.Hoffman	S.Hoffman
Conc. Spiked:	50	50	50	50	50
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	VBLK061493	VBLK061493	VBLK061493	VBLK061493	VBLK061493
Date Prepared:	6/14/93	6/14/93	6/14/93	6/14/93	6/14/93
Date Analyzed:	6/14/93	6/14/93	6/14/93	6/14/93	6/14/93
Instrument I.D.#:	MSF-2	MSF-2	MSF-2	MSF-2	MSF-2
LCS % Recovery:	104	102	104	102	102
Control Limits:	61-145	71-120	76-127	76-125	75-130
MS/MSD Batch #:	V3F57501	V3F57501	V3F57501	V3F57501	V3F57501
Date Prepared:	6/14/93	6/14/93	6/14/93	6/14/93	6/14/93
Date Analyzed:	6/14/93	6/14/93	6/14/93	6/14/93	6/14/93
Instrument I.D.#:	MSF-2	MSF-2	MSF-2	MSF-2	MSF-2
Matrix Spike % Recovery:	92	92	86	92	90
Matrix Spike Duplicate % Recovery:	94	96	92	98	96
Relative % Difference:	2.2	4.3	6.7	6.3	6.5

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Environmental Strategies
101 Metro Dr., Suite 650
San Jose, CA 95110
Attention: Bob Bealkowski

Client Project ID: CA821/04, Grow Group
Matrix: Water
QC Sample Group: 3F57412

Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	S.Hoffman	S.Hoffman	S.Hoffman	S.Hoffman	S.Hoffman
Conc. Spiked:	50	50	50	50	50
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK061793	BLK061793	BLK061793	BLK061793	BLK061793
Date Prepared:	-	-	-	-	-
Date Analyzed:	6/17/93	6/17/93	6/17/93	6/17/93	6/17/93
Instrument I.D.#:	F-3	F-3	F-3	F-3	F-3
LCS % Recovery:	102	92	96	90	96
Control Limits:	61-145	71-120	76-127	76-125	75-130
MS/MSD Batch #:	3F49704	3F49704	3F49704	3F49704	3F49704
Date Prepared:	-	-	-	-	-
Date Analyzed:	6/17/93	6/17/93	6/17/93	6/17/93	6/17/93
Instrument I.D.#:	F-3	F-3	F-3	F-3	F-3
Matrix Spike % Recovery:	92	86	90	82	88
Matrix Spike Duplicate % Recovery:	98	90	96	86	94
Relative % Difference:	6.3	4.5	6.5	4.8	6.6

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Maile A. Springer
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Environmental Strategies	Client Project ID:	CA821/04, Grow Group
101 Metro Dr., Suite 650	Matrix:	Water
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample Group: 3F57401, 12	Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK061693	GBLK061693	GBLK061693	GBLK061693
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/16/93	6/16/93	6/16/93	6/16/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	96	96	97	97
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3F67403	G3F67403	G3F67403	G3F67403
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/16/93	6/16/93	6/16/93	6/16/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	85	85	86	83
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	16	16	15	22

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Malle A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group
101 Metro Dr., Suite 650	Matrix:	Water
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample Group: 3F57402 - 05	Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK061593	GBLK061593	GBLK061593	GBLK061593
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/15/93	6/15/93	6/15/93	6/15/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
LCS % Recovery:	96	100	95	100
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3F48202	G3F48202	G3F48202	G3F48202
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/15/93	6/15/93	6/15/93	6/15/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Matrix Spike % Recovery:	87	87	88	87
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	14	14	13	14

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Christine Meddleton

Maile A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group
101 Metro Dr., Suite 650	Matrix:	Water
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample Group: 3D57406, 08, 10, 11	Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK061493	GBLK061493	GBLK061493	GBLK061493
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/14/93	6/14/93	6/14/93	6/14/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
LCS % Recovery:	100	100	97	100
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3F48202	G3F48202	G3F48202	G3F48202
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/14/93	6/14/93	6/14/93	6/14/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Matrix Spike % Recovery:	93	93	91	90
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	7.3	7.3	9.4	13

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Christine Middleton

Maile A. Springer
Project Manager

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(415) 364-9600 • FAX (415) 364-9233

Environmental Strategies	Client Project ID:	CA821/04, Grow Group
101 Metro Dr., Suite 650	Matrix:	Water
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample Group: 3D57407, 09	Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK061693	GBLK061693	GBLK061693	GBLK061693
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/16/93	6/16/93	6/16/93	6/16/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
LCS % Recovery:	89	88	88	90
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3F67403	G3F67403	G3F67403	G3F67403
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/16/93	6/16/93	6/16/93	6/16/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Matrix Spike % Recovery:	100	100	100	103
Matrix Spike Duplicate % Recovery:	110	110	110	107
Relative % Difference:	9.5	9.5	9.5	3.8

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Christine Shedleter
Maile A. Springer
Project Manager

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Environmental Strategies	Client Project ID:	CA821/04, Grow Group
101 Metro Dr., Suite 650	Matrix:	Water
San Jose, CA 95110		
Attention: Bob Bealkowski	QC Sample Group: 3F57401 - 09, 11	Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Diesel
Method:	EPA 8015
Analyst:	C.Lee
Conc. Spiked:	300
Units:	µg/L
LCS Batch#:	DBLK061593
Date Prepared:	6/15/93
Date Analyzed:	6/16/93
Instrument I.D.#:	GCHP-5
LCS % Recovery:	74
Control Limits:	50-150
MS/MSD Batch #:	DBLK061593
Date Prepared:	6/15/93
Date Analyzed:	6/15/93
Instrument I.D.#:	GCHP-5
Matrix Spike % Recovery:	74
Matrix Spike Duplicate % Recovery:	104
Relative % Difference:	36

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Christine Middleton

Malle A. Springer
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

Appendix L - Quality Assurance Quality Control Report

Quality Assurance Review Summary
for The Grow Group - Underground Storage Tank Closure
Emeryville, California
Samples taken on May 13, 1993

This Quality Assurance (QA) summary includes 6 soil samples and two water samples (including trench water and one rinsate) taken on May 13, 1993 for the Grow Group Underground Storage Tank Closure in Emeryville, California. Sample analysis was performed by state certified Sequoia Analytical Environmental Laboratory, Inc., Redwood City, California, for total purgeable petroleum hydrocarbons (TPPH), total extractable petroleum hydrocarbons (TEPH), and volatile organics (VOCs), by USEPA methods 5030/8015, 3550/8015, and 8240, respectively. The soil samples were also analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) by USEPA method 8020.

The following QA summary addresses the analytical results for all field and laboratory samples analyzed for this project. The laboratory data summaries have been reviewed to assure compliance with required analytical quality control (QC) and chain-of-custody procedures. The results of that review are presented on table 1.

The sample arrived at the laboratory in the chilled state accompanied by the chains of custody. There were no problems encountered during shipping and handling of the samples between the site and laboratory.

Summary of Laboratory Results

Total Purgeable Petroleum Hydrocarbons (TPPH)

All samples tested for TPPH were analyzed within the required method holding times. TPPH was detected in the West Tank 7', North Tank 7', East Tank 7', Pipeline 4', Sump Area, Rinsate and Trench

Water samples. The detection limits for all the analyses are raised because all the samples were analyzed at a dilution to bring the concentration into the calibration range of the instrument.

Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)

As part of the TPPH analysis, the six soil samples were also analyzed for BTEX. Total xylenes were found in the West Tank 7', East Tank 7', and Pipeline 4' samples.

Total Extractable Petroleum Hydrocarbons (TEPH)

All samples tested for TEPH were analyzed within the required method holding times. TEPH was detected in all the samples.

Volatile Organic Compounds (VOCs)

All samples tested for VOCs were analyzed within the required method holding times. Chloroform was detected in the Rinsate sample. Ethyl benzene was detected in the Sump Area sample. Methylene chloride was detected in the Sump Area sample. Toluene was detected in the Sump Area sample. Trichloroethene was detected in the Sump Area sample. Total xylenes were detected in the Sump Area and Trench Water samples. All the samples were analyzed at a dilution due to matrix effects on the sample analysis or to bring the concentration within the calibration range of the instrument. The detection limits are were raised because the samples were run at a dilution.

Field Quality Control Samples

The field QC sample collected with these sample included one travel blank. The travel blank is prepared at the laboratory and accompanies the sample containers to and from the sampling event. The travel blank is used to measure cross contamination, laboratory water quality and laboratory sample vial cleaning. This blank acts as a check for contaminants introduced during the trip from the laboratory to the field and the return trip to the laboratory. The travel blank was analyzed for VOCs by U. S. EPA method 8240. The travel blank was free of contamination.

Laboratory Quality Control

Laboratory QC samples included laboratory blanks and several laboratory QC check samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) samples. The laboratory blank is a volume of a clean reference matrix that is carried through the entire analytical procedure. It is used to determine the levels of contamination associated with the processing and analysis of the samples. The laboratory blanks were free of contamination. The LCS is a control sample of known interference free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The percent recovery and RPDs of the spike compounds were measured and compared with method spike QC limits. The percent recoveries and RPDs of one of the LCS samples was outside of QC limits. The associated results are considered estimated. The MS/MSD recoveries and RPD were within advisory QC limits for the methods of analyses. The surrogate recoveries for the VOC analysis were within acceptable limits for the method.

Quality Assurance Review Summary
for The Grow Group - Soil Investigation
Emeryville, California
Samples taken on May 24, 1993

This Quality Assurance (QA) summary includes 9 soil samples taken on May 24, 1993 for the Grow Group Soil Investigation in Emeryville, California. Sample analysis was performed by state certified Sequoia Analytical Environmental Laboratory, Inc., Redwood City, California, for total purgeable petroleum hydrocarbons (TPPH) and total extractable petroleum hydrocarbons (TEPH), and volatile organics (VOCs), by USEPA methods 5030/8015, 3550/8015, and 8240, respectively.

The following QA summary addresses the analytical results for all field and laboratory samples analyzed for this project. The laboratory data summaries have been reviewed to assure compliance with required analytical quality control (QC) and chain of custody procedures. The results of that review are presented on table 2.

The sample arrived at the laboratory in the chilled state accompanied by the chains-of-custody. There were no problems encountered during shipping and handling of the samples between the site and laboratory.

Summary of Laboratory Results

Total Purgeable Petroleum Hydrocarbons (TPPH)

All samples tested for TPPH were analyzed within the required method holding times. TPPH was detected in samples S5'-MWB2, S-10'-MWB2, S-2.5'-MWB3, S-10'-MWB3, S-2.5'-MWB4, S-5'-MWB4, and S-10'-MWB4. Samples S5'-MWB2, S-10'-MWB2, S-10'-MWB3, S-5'-MWB4, and S-10'-MWB4 were analyzed at a dilution to bring the concentration into the calibration range of the instrument. The detection limits for these samples are raised accordingly.

Total Extractable Petroleum Hydrocarbons (TEPH)

All samples tested for TEPH were analyzed within the required method holding times. TEPH was detected in samples S-3.5'-MWB2, S-5'-MWB2, S-10'-MWB2, S-10'-MWB3, S-2.5'-MWB4, S-5'-

MWB4, and S-10'-MWB4. Samples S-10'-MWB3, and S-5'-MWB4 were analyzed at a dilution to bring the concentration into the calibration range of the instrument. The detection limits for these samples are raised accordingly.

Volatile Organic Compounds (VOCs)

All samples tested for VOCs were analyzed within the required method holding times. No VOCs were detected in these samples. The detection limits were raised because the samples were run at a dilution due to matrix interferences.

Field Quality Control Samples

The field QC sample collected with these sample included one field duplicate. The purpose of the field duplicate is to evaluate field sampling and laboratory precision by comparing results of two samples taken from the same location and to evaluate the homogeneity of the sample matrix. The relative percent difference (RPD) between the pair of results for each analyte is calculated and used to measure the field and laboratory precision. Sample S-10'-MWB3 was taken and analyzed in duplicate. TPPH and TEPH were detected in both field duplicate samples. The RPDs were 35.3, and 66.7 percent, respectively. This indicates non-homogeneity of the sample.

Laboratory Quality Control

Laboratory QC samples included laboratory blanks and several laboratory QC check samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) samples. The laboratory blank is a volume of a clean reference matrix that is carried through the entire analytical procedure. It is used to determine the levels of contamination associated with the processing and analysis of the samples. The laboratory blanks were free of contamination. The LCS is a control sample of known interference free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The percent recovery and RPDs of the spike compounds were measured and compared with method spike QC limits. The percent recoveries and RPDs were all within QC limits for the method. One of the MS percent recoveries was zero and the corresponding MSD was 81 percent, and the RPD was 200 percent.

This is due to matrix effects. The QC limits for the MS/MSD are advisory only and are not used to accept or reject results. The surrogate recoveries for the VOC analysis were within acceptable limits for the method.

Quality Assurance Review Summary
for The Grow Group - Groundwater Investigation
Emeryville, California
Samples taken on June 10, 1993

This Quality Assurance (QA) summary includes 10 groundwater samples taken on June 10, 1993, for the Grow Group Groundwater Investigation in Emeryville, California. Sample analysis was performed by state certified Sequoia Analytical Environmental Laboratory, Inc., Redwood City, California, for total purgeable petroleum hydrocarbons (TPPH), total extractable petroleum hydrocarbons (TEPH), and volatile organics (VOCs), by US EPA methods 5030/8015, 3550/8015, and 8240, respectively.

The following QA summary addresses the analytical results for all field and laboratory samples analyzed for this project. The laboratory data summaries have been reviewed to assure compliance with required analytical quality control (QC) and chain-of-custody procedures. The results of that review are presented on table 3.

The samples arrived at the laboratory in the chilled state accompanied by the chains-of-custody. There were no problems encountered during shipping and handling of the samples between the site and laboratory.

Summary of Laboratory Results

Total Purgeable Petroleum Hydrocarbons (TPPH)

All samples tested for TPPH were analyzed within the required method holding times. TPPH was detected in all the samples except MW-2. All the samples were run at a dilution except MW-2 to bring the concentration of the TPPH into the linear calibration range of the instrument. The detection limits for these samples were raised accordingly.

Total Extractable Petroleum Hydrocarbons (TEPH)

All samples tested for TEPH were analyzed within the required method holding times. TEPH was detected in all the samples except MW-2. All the samples were run at a dilution except MW-2 to bring the concentration of the TPPH in to the linear calibration range of the instrument. Discrete peaks were detected in the gas chromatogram for sample MW-2. However, the peaks do not fit any extractable hydrocarbon pattern. Based on the available analytical information generated for this sample, the origin and identity of these peaks is unknown. The detection limits for these samples were raised accordingly.

Volatile Organic Compounds (VOCs)

All samples tested for VOCs were analyzed within the required method holding times. Benzene, toluene, ethylbenzene, and xylenes were detected in sample MW-1. Several of the samples were run at a dilution due to matrix effects or other factors. The detection limits for these samples were raised accordingly.

Field Quality Control Samples

Field QC collected with these samples included one trip blank, one equipment blank, and one field duplicate. The trip blank is prepared at the laboratory and accompanies the sample containers to and from the sampling event. The trip blank is used to measure cross contamination, laboratory water quality and laboratory sample vial cleaning. These blanks act as a check for contaminants introduced during the trip from the laboratory to the field and the return trip to the laboratory. The trip blank was free of contamination. The purpose of the equipment blank is to measure the effectiveness of the equipment decontamination process used during sample collection and as a check for potential cross contamination. The equipment blank was free of contamination. The purpose of the field duplicate is to evaluate field sampling and laboratory precision by comparing results of two samples taken from the same location and to evaluate the homogeneity of the sample matrix. The relative percent difference (RPD) between the pair of results for each analyte is calculated and used to measure the field and laboratory precision. Sample

200 is a duplicate of sample MWB-1. TPPH and TEPH were detected in both field duplicate samples. The RPDs were 121.1, and 29.8 percent, respectively. The high RPD for the TPPH results indicate either inconsistent field sampling, laboratory precision, or non-homogeneity of the sample.

Laboratory Quality Control

Laboratory QC included laboratory blanks and several laboratory control samples (LCS), and matrix spike/matrix spike duplicate (MS/MSD) samples. The laboratory blank is a volume of a clean reference matrix that is carried through the entire analytical procedure. It is used to determine the levels of contamination associated with the processing and analysis of the samples. The laboratory blanks were free of contamination. The LCS is a control sample of known interference free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The percent recovery and RPDs of the spike compounds were measured and compared with method spike QC limits. The percent recoveries and RPDs for the LCS samples were all within QC limits for the method. The matrix spike/matrix spike duplicate (MS/MSD) is used to measure the effect of the matrix on the analysis. The percent recoveries and RPDs for the MS/MSD were within advisory limits for the methods used. Due to matrix effects, the QC limits for the MS/MSD are advisory only and are not used to accept or reject results. Surrogate compounds are added to each sample in the VOC analysis to monitor the system performance during the analysis. The surrogate recoveries for the VOC analysis were within acceptable QC limits for the method.