APPENDIX H, PART 2

GROUNDWATER TECHNOLOGY, INC.

4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

July 10, 1990

Job No. 203 680 5016

Mr. Scott Kinderwater
California Regional Water Quality Control Board
San Francisco Bay Region
1800 Harrison Street
Oakland, CA 94612

Dear Mr. Kinderwater:

Groundwater Technology, Inc., on behalf of Safety-Kleen Corporation, is pleased to present this Workplan for Soil-Vent System (SVS) and Recovery-Well Installation. The workplan provides construction details for the SVS piping and the free-phase hydrocarbon recovery well which have recently been installed during underground storage tank replacement activities at the Safety Kleen facility located at 404 Market Street in Oakland, California.

This work plan covers only installation procedures. Construction of treatment facilities for resultant soil gas and free product, as well as regulatory permitting, operations and maintenance, and the monitoring program for the system, will be addressed in a separate work plan. The SVS and recovery well have been installed during tank replacement to minimize facility disruption due to construction activities.

If you have any questions regarding this workplan, please contact Ms. Anne Lunt of Safety-Kleen Corporation at (213) 831-3905 or me at (415) 671-2387.

Sincerely,
GROUNDWATER TECHNOLOGY, INC.

Paul D. Horton

Paul D. Horton
Project Manager

PDH:da

Enclosure

cc: Anne Lunt, Safety-Kleen Corporation

L501604M.RT

WORK PLAN
FOR SOIL-VENT SYSTEM
AND RECOVERY-WELL INSTALLATION
JUNE 15, 1990

GROUNDWATER TECHNOLOGY, INC.
CONCORD, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.
4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

WORK PLAN
FOR SOIL-VENT SYSTEM
AND RECOVERY-WELL INSTALLATION
JUNE 15, 1990

Prepared for:

Safety-Kleen Corporation
P.O. Box 1429
San Pedro, CA 90733-1429

Prepared by:

GROUNDWATER TECHNOLOGY, INC.
4080-D Pike Lane
Concord, CA 94520

Richard M. Thomasser
Project Hydrogeologist

Paul D. Horton
Project Manager

Allen B. Storm
Registered Geologist
No. 4394

R5016C.RT

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WORK PLAN
FOR SOIL-VENT SYSTEM
AND RECOVERY-WELL INSTALLATION
JUNE 15, 1990

INTRODUCTION

This work plan presents the details of installation of a soil-vent system (SVS) and recovery well at the Safety-Kleen Corporation (Safety-Kleen) facility in Oakland, California (Figure 1). The soil-vent system and recovery well are to be used for future remediation of soil and groundwater contamination by mineral spirits and volatile organic compounds (VOCs). Installation is scheduled during underground storage tank replacement activities planned for June 1990, in order to minimize interruption of facility operations due to construction.

PROJECT OVERVIEW

Safety-Kleen operates a commercial-cleaning products distribution facility at 404 Market Street in Oakland. Presently, three underground storage tanks (USTs) are utilized at the facility. Two 6,000-gallon steel USTs store spent mineral spirits solvent which is sent for recycling to the Safety-Kleen recycling center in Reedley, California, and one 10,000-gallon UST is used to store clean mineral spirits solvent for distribution to customers (Figure 2).

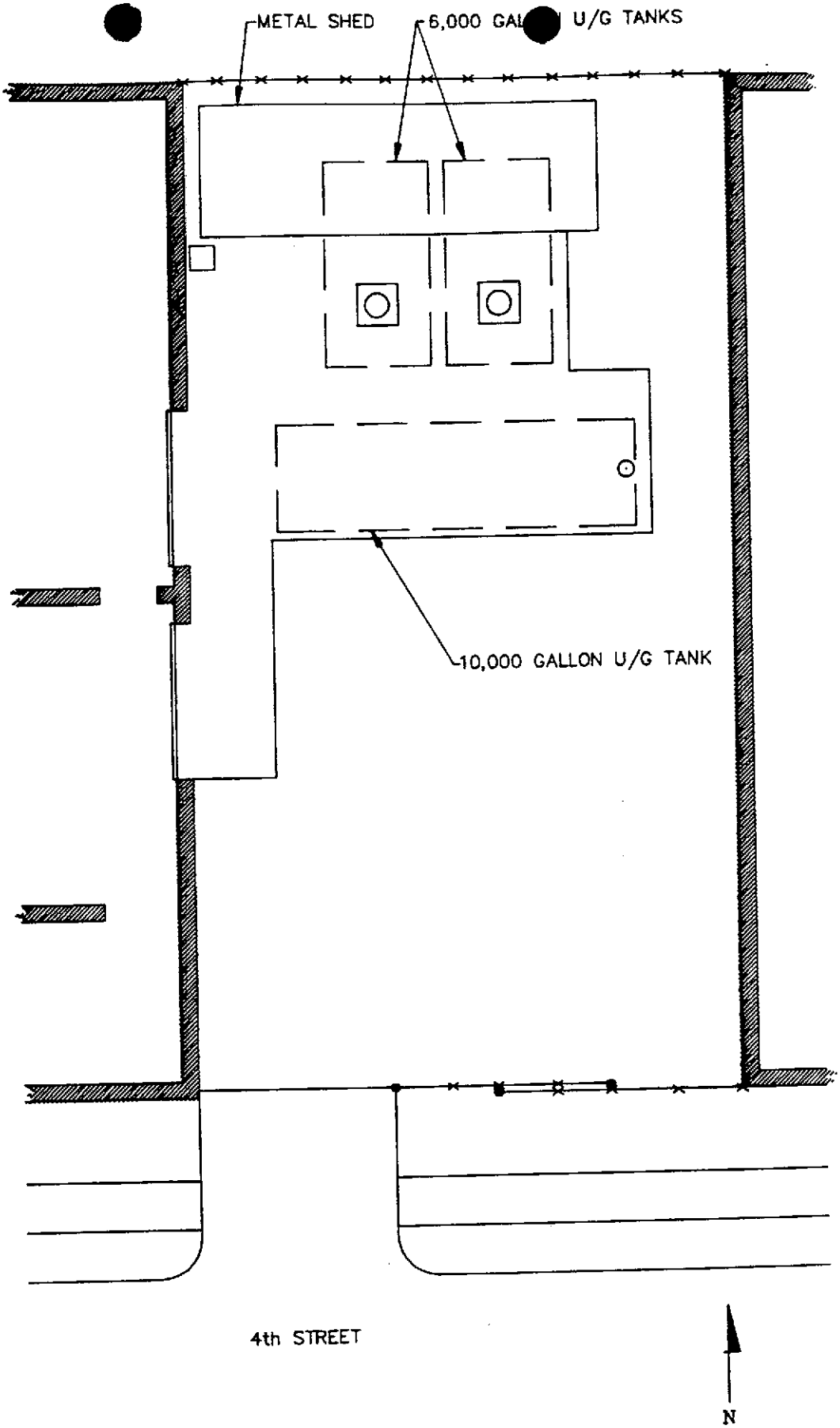

FIGURE 2
PRE-REPLACEMENT UST LOCATIONS

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OAKLAND, CALIFORNIA

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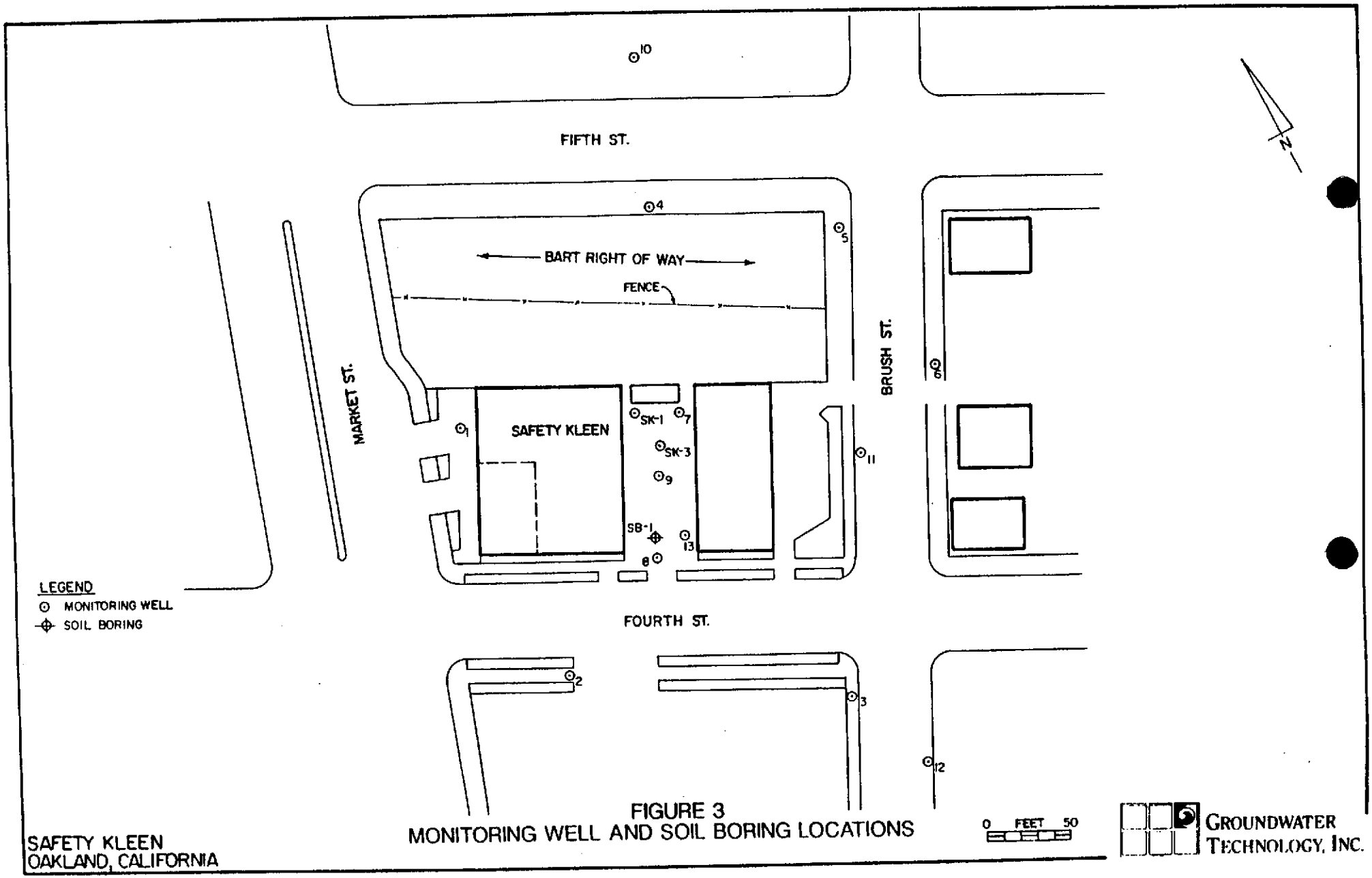

FIGURE 3
MONITORING WELL AND SOIL BORING LOCATIONS

SAFETY KLEEN
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

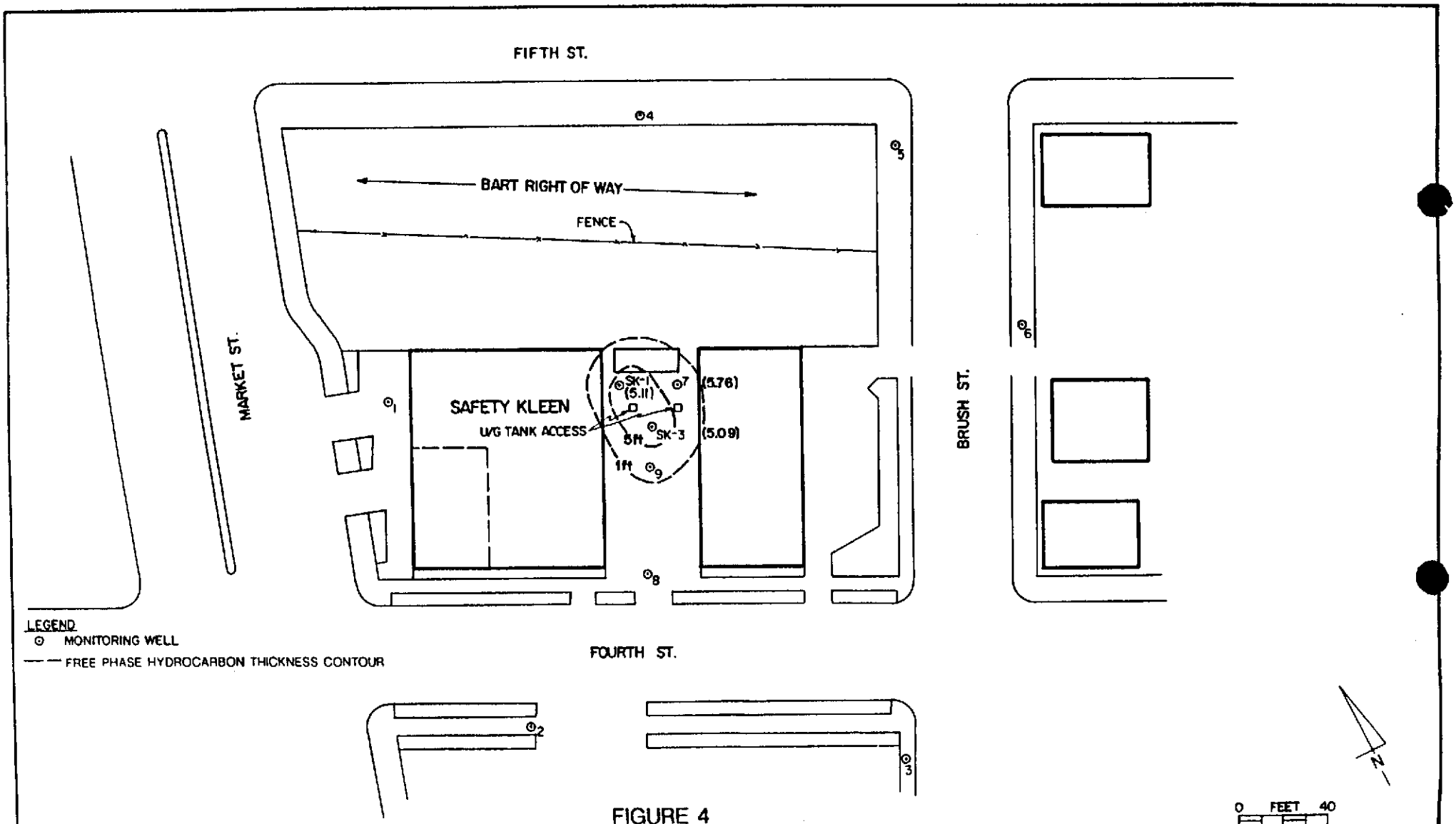

FIGURE 4
FREE PHASE HYDROCARBON THICKNESS MAP
(8/4/88)

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OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

TECHNICAL APPROACH

SOIL-VENT SYSTEM

Results of the soil-vent feasibility study indicate that the transmissivity of the unsaturated zone is quite low, due to the silt and clay content of the soil. The radius of influence of a vertical vent point is calculated to be approximately 35 feet.

Based on the results of the test and the shallow depth to groundwater, it was determined that a soil-vent system (SVS) utilizing a horizontally-trenched piping design would be most suitable for the site. The system will consist of seven 20-foot lengths of perforated 4-inch diameter poly-vinyl chloride (PVC) pipe (SV-1 to SV-7) layout of the SVS will be as shown on figure 7. The piping will be manifolded in the southern corner of the site (Future treatment area) and will be valved separately to enable independent operation.

SV-1 through SV-6 are designed to effect remedial action of the soils beneath the buildings and away from the tank pit area. The vent piping will be placed at a depth of 5 feet (approximately 2 feet above the high groundwater elevation) to maximize the removal of contaminants from the capillary fringe zone. The piping will be installed within the excavation during tank replacement activities and also in trenches (areas away from tank excavation). Polyethylene film (10 mil) and geotextile fiber will be utilized to maximize venting of the unexcavated native soil beyond the edges of the excavation (Figure 8). SV-7 will be placed inside the tank pit area to address potential VOCs which may enter the backfill material. No polyethylene film or geotextile will be used near SV-7.

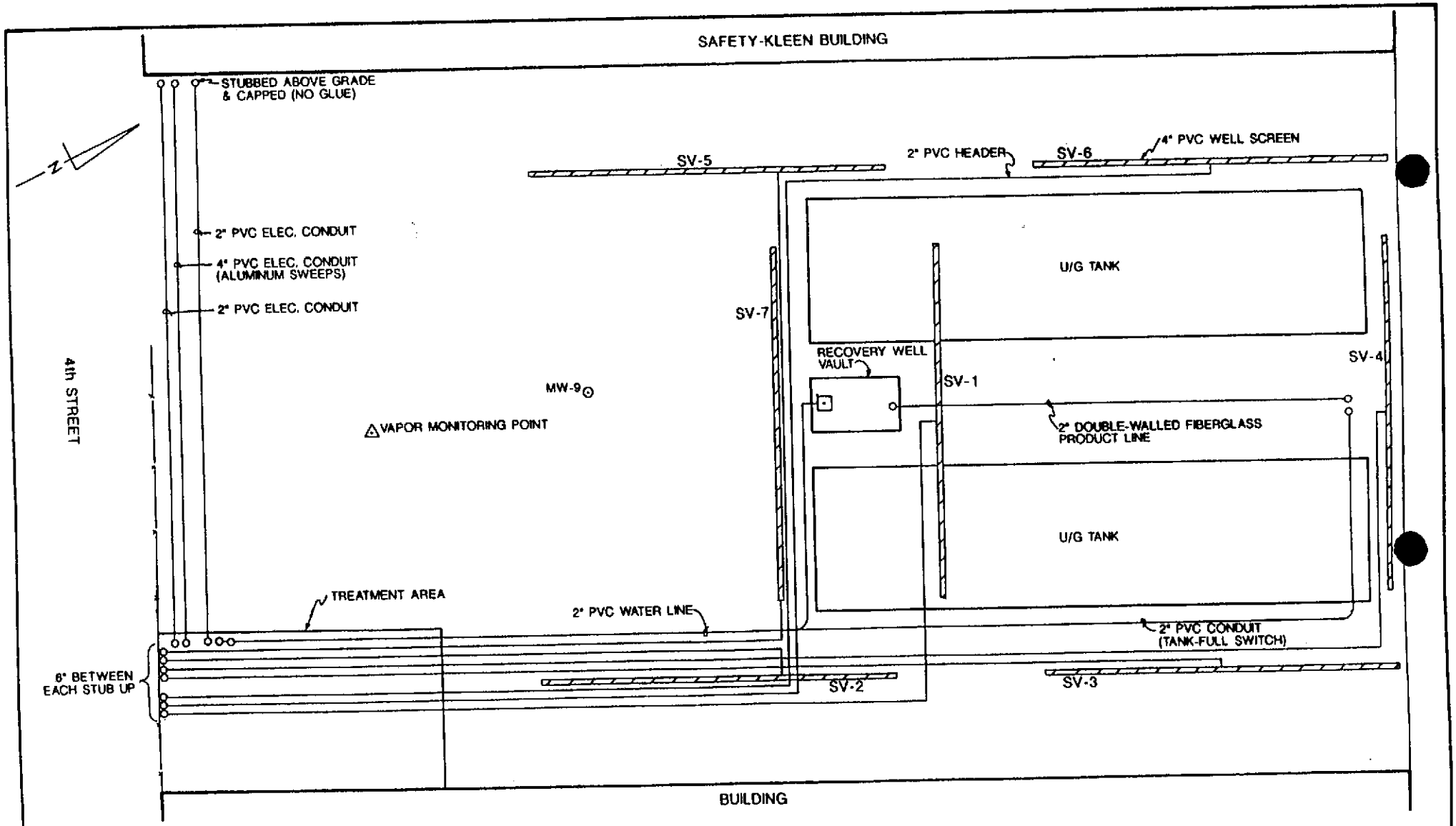

FIGURE 7
SOIL VENT SYSTEM LAYOUT

0 FEET 5

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OAKLAND, CALIFORNIA

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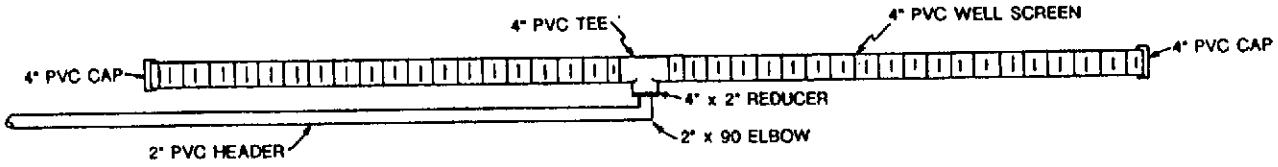
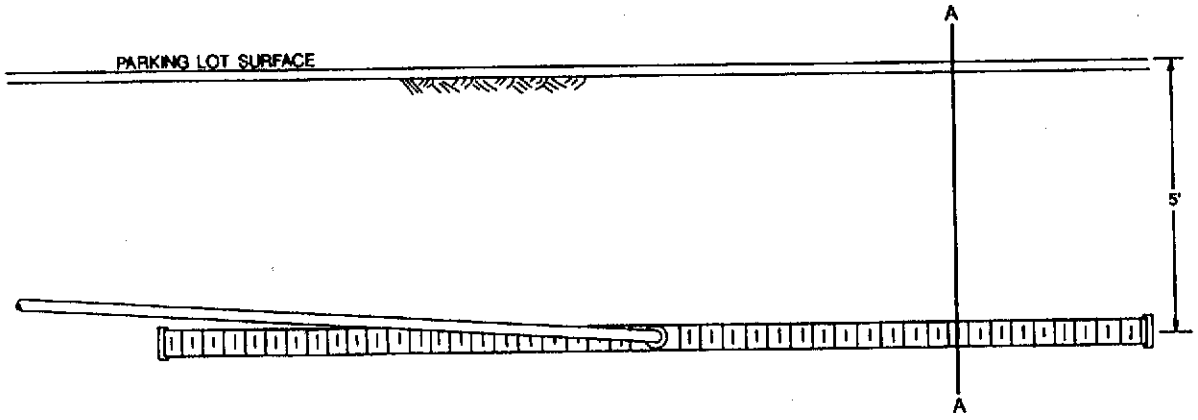
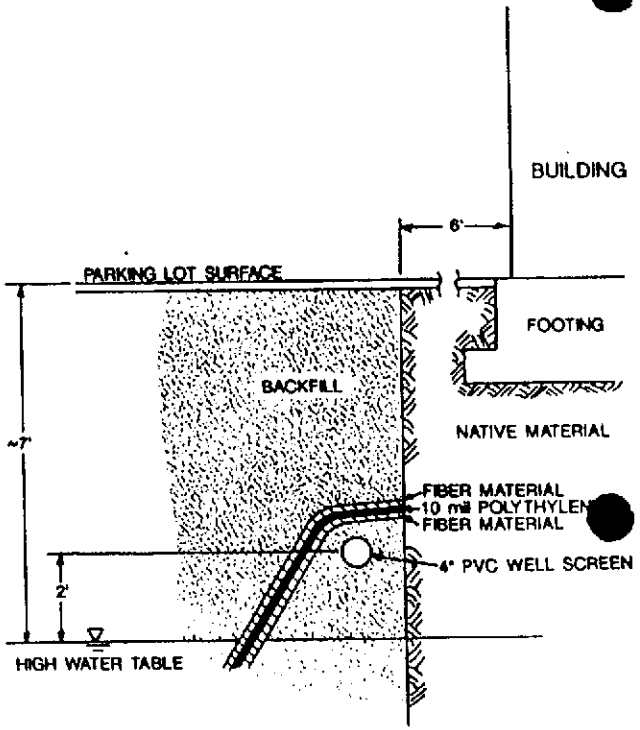


SOIL VENT TRENCH PLAN VIEW



SOIL VENT TRENCH ELEVATION



SECTION A-A

NO SCALE

FIGURE 8
SOIL VENT SYSTEM DETAILS

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OAKLAND, CALIFORNIA

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The soil-vent system piping will be connected to a high-vacuum blower to enable removal of contaminants from the unsaturated zone. The extracted soil-gas may be treated using an abatement system such as granular activated carbon. Details of the treatment system design and construction will be presented in a separate work plan.

SOIL-VENT SYSTEM MONITORING

Two/one-inch diameter PVC vapor-monitoring points will be installed as a nested pair at separate depths in one boring to monitor the influence of the soil-vent system during system operation. The deep vapor-monitoring point will be screened from 7.5- to 8.5-feet below grade. The location of the vapor monitoring point pair is shown on Figure 7. The shallow vapor-monitoring point will be screened from approximately 4- to 5-feet below grade. (Figure 9). The screen slot size will be 0.020-inch.

Installation of the nested vapor-monitoring points will be accomplished using a drill rig equipped with 10-inch diameter, hollow-stem augers. A borehole will be drilled to approximately 9 feet below grade. The deep monitoring point casing and screen will be suspended in the borehole with the screened interval at the appropriate depth (7.5- to 8.5-feet). Monterey sand will be placed around the PVC casing and screen and extended approxi-

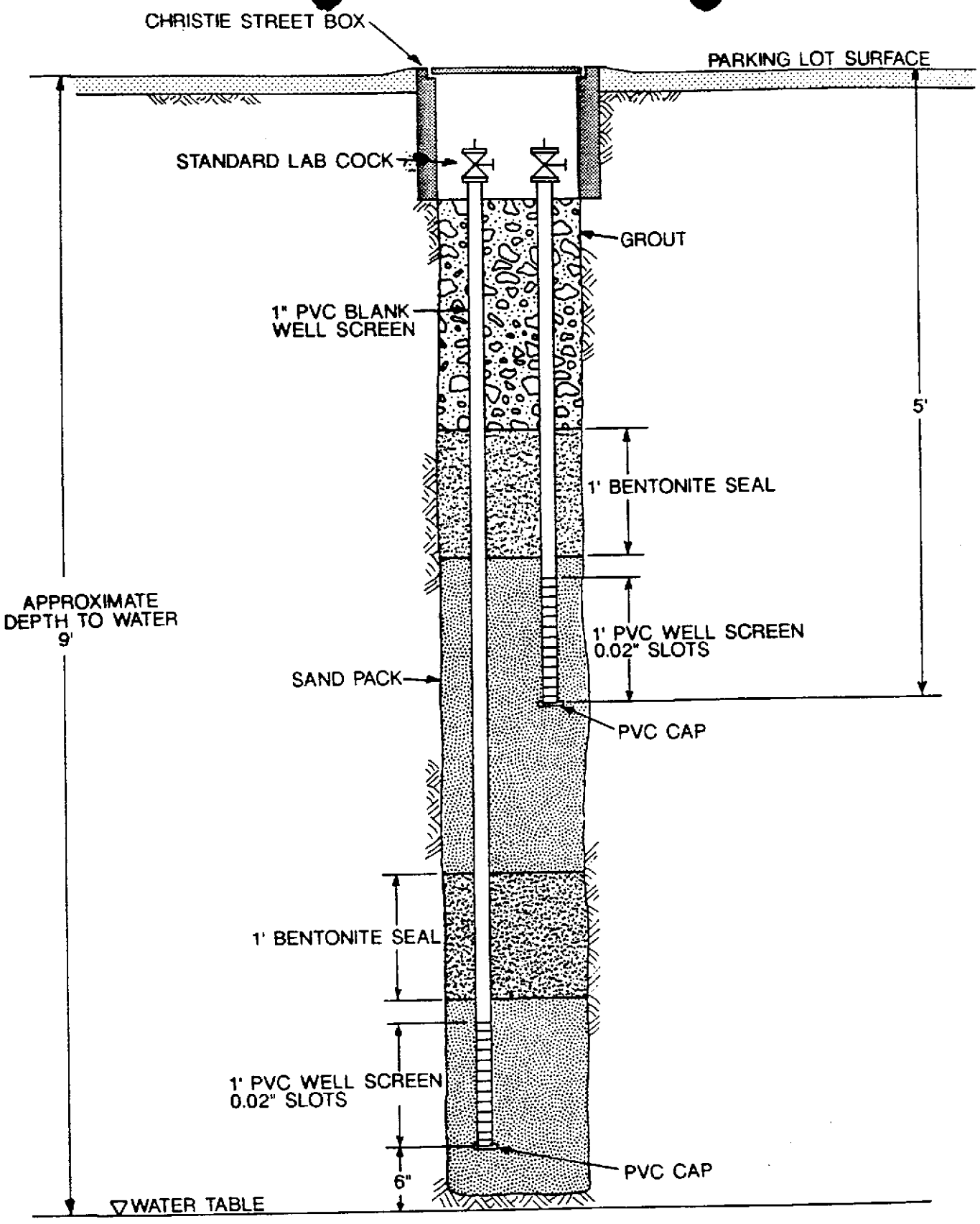


FIGURE 9
SOIL VENT SYSTEM MONITORING POINTS

NO SCALE

SAFETY-KLEEN
OAKLAND, CALIFORNIA

GROUNDWATER
TECHNOLOGY, INC.

mately 3 inches above the top of the screened interval. A one-foot seal of hydrated granular bentonite will be placed above the sand pack.

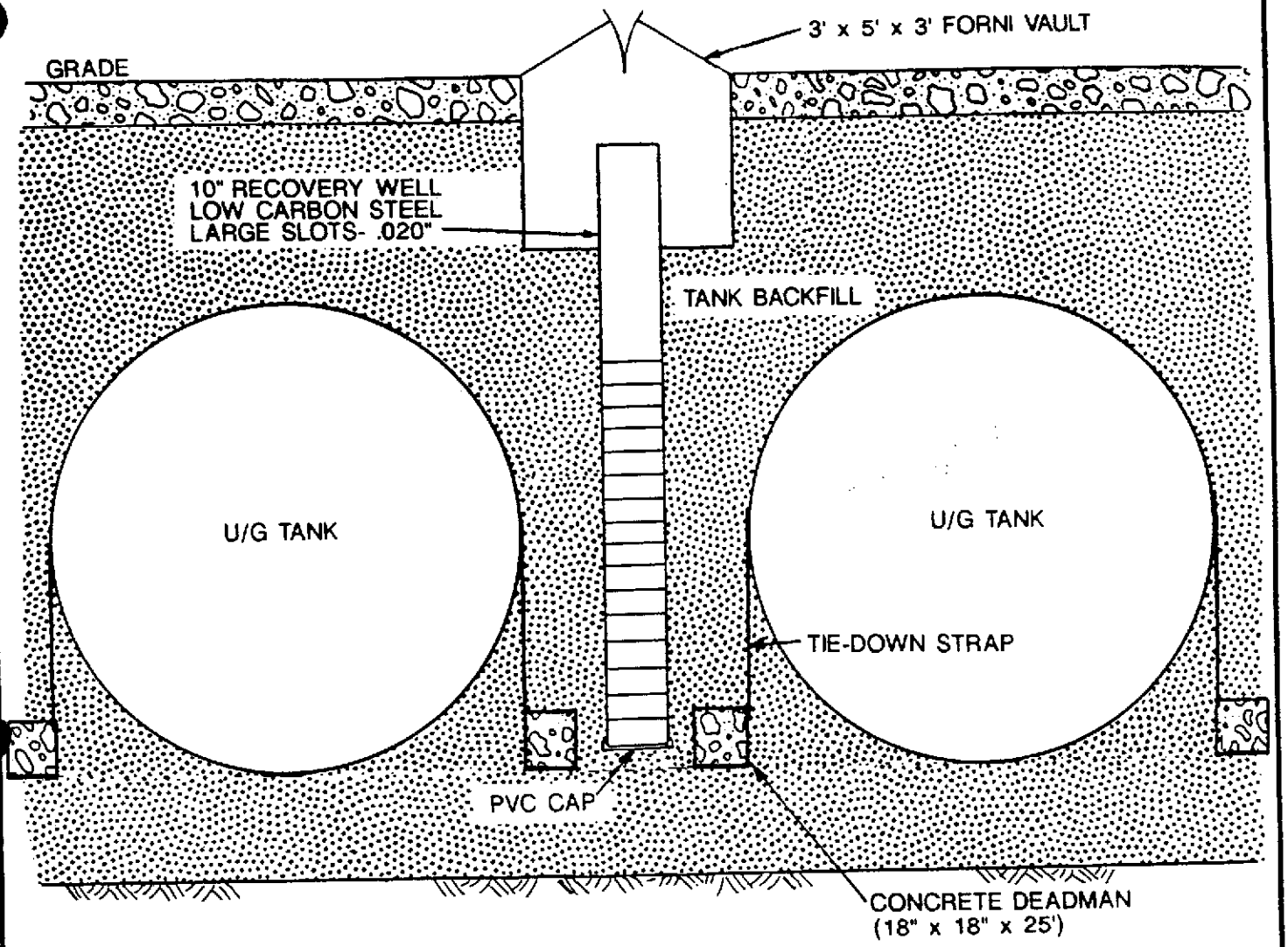
The shallow vapor-monitoring point will be completed in a similar manner, by suspending the casing and screen at the appropriate depth in the borehole and placing the Monterey sand filter pack around the screen and a one-foot bentonite seal above.

The borehole will be backfilled to just below the ground surface with neat cement, and a traffic-rated Christie box will be cemented in place to protect the monitoring points.

SEPARATE-PHASE HYDROCARBON RECOVERY WELL

To facilitate future separate-phase hydrocarbon removal, a recovery well will be installed within the tank pit during tank replacement activities. The well will be constructed of large diameter (10-inch) stainless steel pipe and screen. The screen-slot size will be 0.020 inches. The well screen and casing will be installed at the time the new tanks are installed in the excavation (Figure 10). The backfill around the well screen will consist of pea gravel.

A 3-foot by 5-foot Forni vault will be installed at the surface to protect the wellhead. The wellhead will be connected to the future treatment area by 2-inch diameter PVC pipe and conduit to enable future application of the well for groundwater extraction. A 2-inch diameter iron pipe with fiberglass secondary containment will connect the wellhead to the onsite spent mineral spirits disposal dumpster for separate-phase hydrocarbon recovery.



NOTE: U/G TANKS SPACED 7 FEET APART

FIGURE 10
PRELIMINARY PRODUCT RECOVERY WELL DESIGN

NO SCALE

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OAKLAND, CALIFORNIA

ML 2/90

GROUNDWATER TECHNOLOGY, INC.

SCHEDULE

Tank excavation and replacement is scheduled to begin early June 1990. The activities described above will be performed simultaneously to minimize disruption of facility operations. Completion of the soil-vent system and recovery well installations is estimated around June 20, 1990.

The soil-vent system monitoring points will be installed after completion of grading and resurfacing (estimated to be completed July 2, 1990).

APPENDIX A
SOIL-VENT FEASIBILITY TEST RESULTS

SOIL VENT FEASIBILITY TEST
SAFETY-KLEEN
OAKLAND SERVICE CENTER
404 MARKET STREET
OAKLAND, CA

On January 18, 1990, Groundwater Technology, Inc. conducted a Soil-Vent Feasibility Study at the Safety-Kleen Oakland Service Center. The feasibility study consisted of collecting data to determine the flow characteristics of the soil, the radius of influence for vapor extraction wells, and the concentration of hydrocarbon vapors in the soil gas.

A soil-vent remediation system operates by creating a vacuum in soil-vent points with a high-vacuum blower. This vacuum draws fresh air through the ground to the contaminated soil. The liquid hydrocarbons trapped in the soil vaporize into the air within the pore spaces and are captured by the vacuum at the soil-vent point. This air may then be treated to remove the hydrocarbon vapors and discharged to the atmosphere.

To determine the applicability of soil-vent remediation, a soil-vent feasibility study was conducted. The two criteria for determining the feasibility of soil-vent feasibility are the ability of air to move through the soil (transmissivity), and the concentration of hydrocarbon vapors in the air extracted from the soil.

To measure the transmissivity of the soil, a vacuum drawdown test was conducted. This test is similar to a pump test for a water well. The test was conducted by using an Internal Combustion Catalytic Unit (ICCU) which utilizes a 1-1/2 horsepower high-vacuum blower to evacuate air from the soil-vent point being tested. The vacuum created by the blower was measured in inches of water column by a vacuum gauge and the air-flow velocity was

measured with a hot-wire anemometer. An existing groundwater monitoring well was utilized at the Safety-Kleen site for the vacuum drawdown test and the vacuum induced in nearby monitoring wells was measured using magnehelic vacuum gauges. To determine the concentration of hydrocarbon vapors in the extracted air, samples were collected in Tedlar^{R} bags for laboratory analysis.

At the Safety-Kleen location, groundwater monitoring wells MW-9 and MW-8 were utilized as vapor extraction points for two vapor extraction tests. These monitoring wells are screened from 5 to 30 feet below surface. The depth to water in these wells was approximately 9 feet in MW-9 and 7.75 in MW-8. Several feet of free floating mineral spirits were present on top of the water in MW-9.

Lithologic data from the boring logs for the groundwater monitoring wells at the site suggests that the subsurface materials are fairly uniform across the site and consist primarily of clayey, silty, fine-grained sands in the interval above the water table.

During the first test, monitoring well MW-9 was used as the extraction point. For a second test, monitoring well MW-8 was used as the extraction point. During both of these tests, vacuum response was measured in other on-site groundwater monitoring wells. The wells labeled as "MW" wells were all installed by Groundwater Technology and are completed from 5 to 30 feet with approximately 2 to 4 feet of screened section above the water table. Two monitoring wells on the site (Sk-1 and SK-3) were installed by another consultant, and are screened from 5 to 20 feet below grade. The high vacuum blower was operated at a vacuum of approximately 60- to 70-inches of water column while venting from MW-9. Flow from this well was approximately 3.5 cubic feet per minute (CFM). While venting from MW-8, vacuum was approximately the same and flow was approximately 4.0 CFM.

During the period of each vent test, the induced vacuum in monitoring well SK-3 was monitored versus time by utilizing a Magnehelic vacuum transducer capable of detecting variations of .01" of water column. The data from this transducer along with the time of each measurement was recorded in an ORS Environmental Equipment Model DL-120 Datalogger. This data set was then downloaded at the office into an IBM-PC computer for reduction and analysis.

RESULTS

The vacuum drawdown data from monitoring well SK-3 was plotted versus time on a log-log plot and analyzed by matching with Hantush type-curves for leaky confined aquifers in a method analogous to that used for the analysis of aquifer pumping tests. The applicability of using aquifer testing methods in the analysis of vapor extraction tests was explored by J.W. Massman in the Journal of Environmental Engineering, Vol. 115, No. 1, February, 1989. The analysis of time-drawdown data from soil vent tests offers the advantage of allowing for a more accurate determination of transmissivity to air and the opportunity to more accurately detect inhomogeneities in the subsurface materials beneath the potential soil vent test.

The data plot and type-curve fit generated for the soil vent test on Monitoring Well MW-9 are attached. The analysis of this test yielded a hydraulic conductivity to air of 0.00235 meter per second. This is a relatively low value due to the silty and clayey nature of the new nearsurface materials at the site. Due to the distance from Monitoring Well MW-8 to SK-3 being in excess of the radius of influence for the well, no drawdown data was recorded during the vent test on MW-8

Radius of influence for the soil vent points was determined directly by plotting the induced vacuum in the observation wells against the log of the distance from the vented well. When the observation wells are at different distances from the vented well, this plot defines a straight line that can be extended to the zero vacuum intercept to estimate radius of influence. The plots of the data are attached. During the test on MW-9, a radius of influence of less than 35 feet was determined. This was based on a significant induced vacuum of 0.35-inch of water, measured in SK-3 at a distance of 18 feet, and near zero readings in monitoring wells at 38 and 40 feet from the vented well. During the test on MW-8, the closest observation well was 50 feet away and the data from this well is inconclusive, indicating that if there was an influence on this well, it was small enough to be lost in noise created by wind at the site.

Given the low flow (3.5 to 4.0 CFM) recovered during the tests, several venting wells would be required to supply an adequate volume of air for efficient cleanup of the subsurface. Since the plume at the site extends underneath buildings, and since the unsaturated zone is generally less than 8 feet in thickness, it has been recommended that a system of horizontal trenches at the perimeter of each building may be the most efficient extraction system for this site.

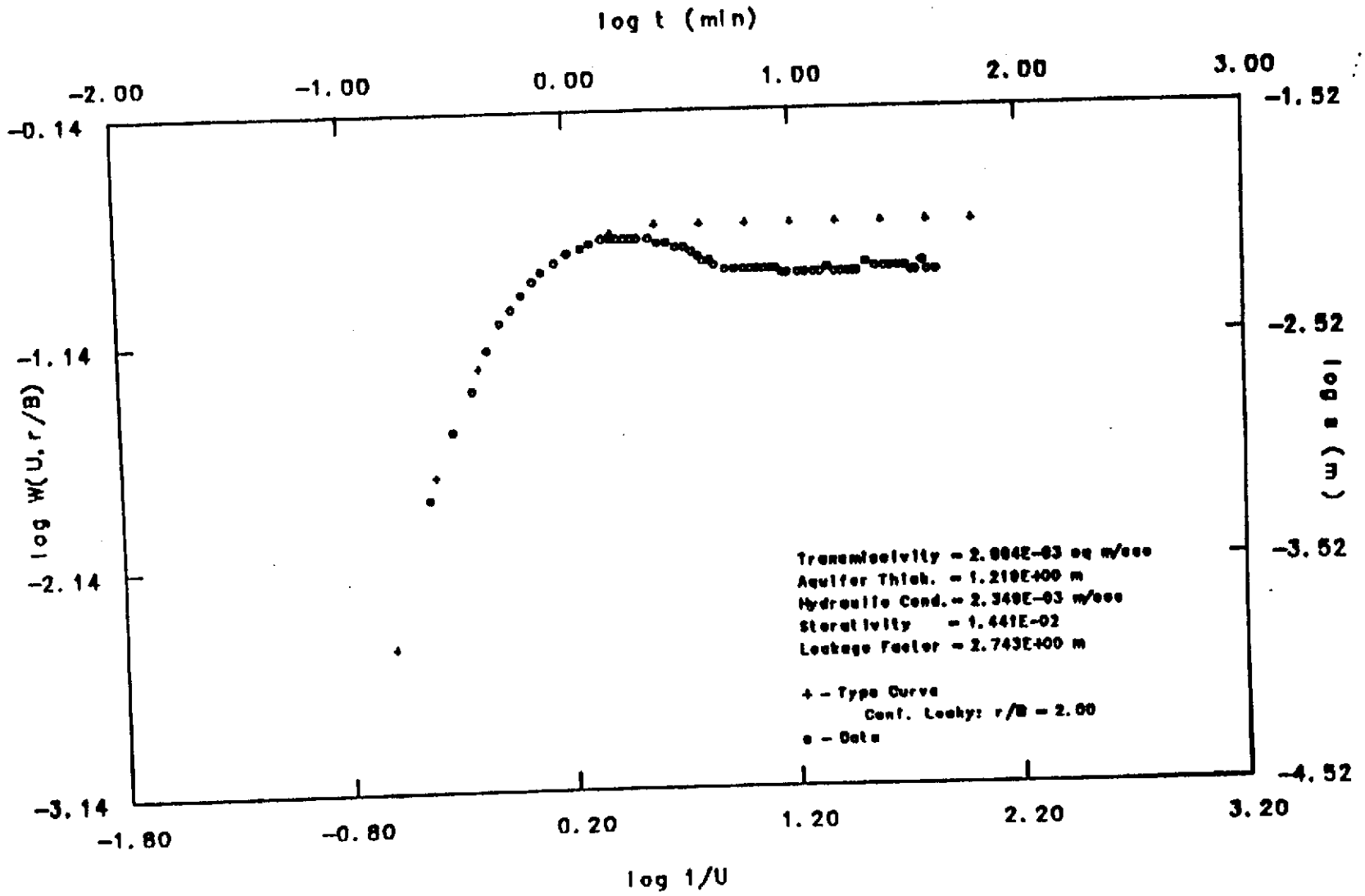
Samples of extracted air were collected during the soil vent testing conducted on MW-8, and were submitted to a California-certified laboratory for analysis. After venting from extraction point MW-8 for 20 minutes, 63 minutes, and 120 minutes, samples of the influent air to the ICCU were collected in Tedlar^{R} bags. A sample of the effluent air from the ICCU was simultaneously collected at about 20 minutes into the test. The influent and effluent samples collected at 20 minutes into the test (MW8-IN1 and MW8-OUT1) as well as the influent sample collected after 120

minutes (MW8-IN3) were submitted for laboratory analyses. The samples were analyzed within 48 hours of collection for volatile organic compounds using U.S. Environmental Protection Agency (EPA) Method 8010 to look for chlorinated components and also for Total Petroleum Hydrocarbons (TPH) as Mineral Spirits. The laboratory analyses reports are attached. No chlorinated components were detected in either the influent or effluent samples. The analyses for TPH as Mineral Spirits detected 40 micrograms per litter (ug/l) in sample MW8-IN1, 24 ug/l in sample MW8-OUT1, and 8 ug/l in sample MW8-IN3. Since monitoring contamination, it is recommended that the soil vent system be retested after installation in order to obtain the data necessary to design emission controls for the site.

EMISSION CONTROLS

This test was conducted as a pilot test for soil vapor extraction under Regulation 8, Rule 46 of the Bay Area Air Quality Management District (BAAQMD). The extracted vapors were routed through the ICCU where the hydrocarbon vapors were combusted. Effluent concentrations were monitored with a Lower Explosive Limit Meter at intervals of approximately 30 minutes while the system was operating.

SK OAKLAND * SVT MW9-SK3



GROUNDWATER TECHNOLOGY, INC.

Data for Soil Vent Test

SAFETY KLEEN OAKLAND

Well Name: MW9-SK3 **Date of Test:** 1/18/90

Aquifer Thickness (b) = 4.000 ft
Vented Well Discharge(Q) = 3.000 cfm
Radius of Vented Well = 0.167 ft
Distance of Observation Well from Vented Well = 18.0 ft

Entry No.	Time(t) (min)	Drawdown(s) (ft)	t / d^2 (min/sq ft)
1	0.000	0.000	
2	0.033	0.000	1.02E-04
3	0.067	0.000	2.07E-04
4	0.101	0.000	3.12E-04
5	0.167	0.000	5.15E-04
6	0.234	0.002	7.22E-04
7	0.300	0.004	9.26E-04
8	0.368	0.006	1.14E-03
9	0.434	0.009	1.34E-03
10	0.500	0.012	1.54E-03
11	0.568	0.014	1.75E-03
12	0.634	0.016	1.96E-03
13	0.700	0.018	2.16E-03
14	0.768	0.020	2.37E-03
15	0.900	0.022	2.78E-03
16	1.034	0.024	3.19E-03
17	1.167	0.025	3.60E-03
18	1.301	0.026	4.02E-03
19	1.433	0.027	4.42E-03
20	1.567	0.027	4.84E-03
21	1.701	0.028	5.25E-03
22	1.833	0.028	5.66E-03
23	1.967	0.027	6.07E-03
24	2.100	0.027	6.48E-03
25	2.350	0.027	7.25E-03
26	2.600	0.026	8.02E-03
27	2.850	0.026	8.80E-03
28	3.100	0.025	9.57E-03
29	3.350	0.025	1.03E-02
30	3.600	0.024	1.11E-02
31	3.850	0.023	1.19E-02
32	4.100	0.022	1.27E-02
33	4.350	0.022	1.34E-02
34	4.600	0.021	1.42E-02
35	5.100	0.020	1.57E-02
36	5.600	0.020	1.73E-02
37	6.100	0.020	1.88E-02
38	6.600	0.020	2.04E-02
39	7.100	0.020	2.19E-02

GROUNDWATER TECHNOLOGY, INC.

SAFETY KLEEN OAKLAND • SOIL VENT TEST • MW9 - SK3

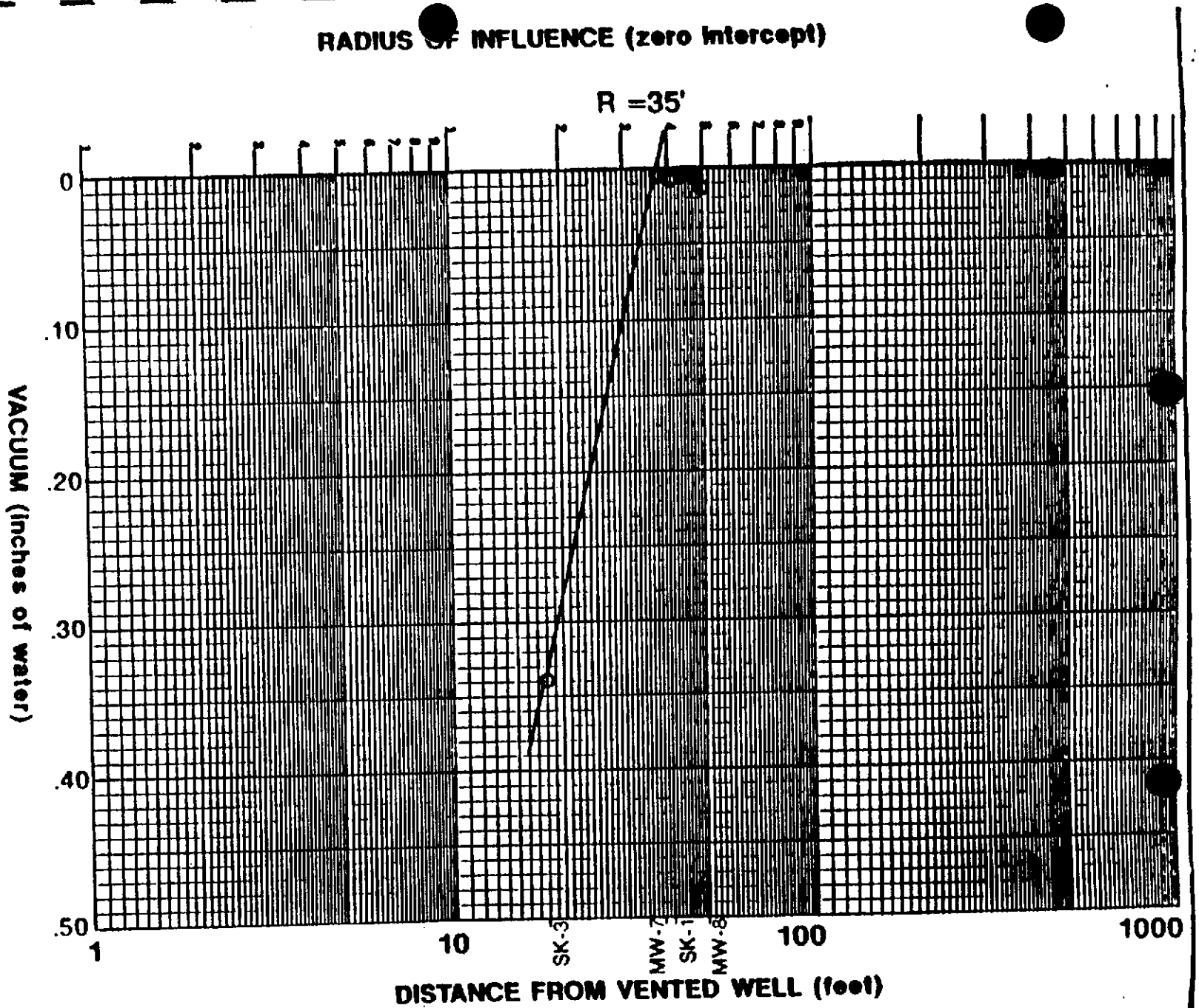
40	7.600	0.020	2.35E-02
41	8.100	0.020	2.50E-02
42	8.600	0.020	2.65E-02
43	9.100	0.019	2.81E-02
44	9.600	0.019	2.96E-02
45	10.600	0.019	3.27E-02
46	11.600	0.019	3.58E-02
47	12.600	0.019	3.89E-02
48	13.600	0.019	4.20E-02
49	14.600	0.020	4.51E-02
50	15.600	0.019	4.81E-02
51	16.600	0.019	5.12E-02
52	17.600	0.019	5.43E-02
53	18.600	0.019	5.74E-02
54	19.600	0.019	6.05E-02
55	21.600	0.021	6.67E-02
56	23.600	0.020	7.28E-02
57	25.600	0.020	7.90E-02
58	27.600	0.020	8.52E-02
59	29.600	0.020	9.14E-02
60	31.600	0.020	9.75E-02
61	33.600	0.019	1.04E-01
62	35.600	0.019	1.10E-01
63	37.600	0.021	1.16E-01
64	39.600	0.019	1.22E-01
65	43.600	0.019	1.35E-01

VENTED WELL: MW-9

APPLIED VACUUM: 70"

FLOW: 3.5 CFM

TIME: 60 min.



SAFETY-KLEEN
OAKLAND, CALIFORNIA

DISTANCE / VACUUM PLOT

ML 2/90

GROUNDWATER TECHNOLOGY, INC.

GTEL
ENVIRONMENTAL LABORATORIES, INC.
Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

01/25/90 SP Page 1 of 1

WORK ORD#: D001437
CLIENT: PAUL HORTON
GROUNDWATER TECHNOLOGY, INC
4080-D PIKE LANE
CONCORD, CA 94520
PROJECT#: 203-680-5016.06
LOCATION: OAKLAND, CA

SAMPLED: 01/18/90 BY: F. BEILER
RECEIVED: 01/18/90
ANALYZED: 01/18/90 BY: R. GONZALEZ

MATRIX: Air
UNITS: ug/L

PARAMETER	MDL	SAMPLE # I.D.	01 MW8 IN 1	02 MW8 OUT 1	03 MW8 IN 3		
Benzene	0.5		<0.5	<0.5	<0.5		
Toluene	0.5		<0.5	<0.5	<0.5		
Ethylbenzene	0.5		<0.5	<0.5	<0.5		
Xylenes	0.5		<0.5	<0.5	<0.5		
Total BTEX	0.5		<0.5	<0.5	<0.5		
Misc. Hydrocarbons (C4-C12)	1		40	24	8		
Total Petroleum Hydrocarbons in the range of Mineral Spirits	1		40	24	8		

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: Modified EPA 5030/8020/8015

Emma P. Popek
EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

01/23/90 JP

WORK ORD#: D001492
CLIENT: PAUL HORTON
GROUNDWATER TECHNOLOGY, INC.
4080-D PIKE LANE
CONCORD, CA 94520
PROJECT#: 203-680-5016.06
LOCATION: 404 MARKET STREET
OAKLAND, CA
SAMPLED: 01/18/90 BY: F. BEILER
RECEIVED: 01/18/90 BY: K. FILLINGER
ANALYZED: 01/19/90 BY: R. GONZALEZ

MATRIX: Air
UNITS: ug/L

PARAMETER	MDL	SAMPLE # I.D.	01 MW8INLET
Total Petroleum Hydrocarbons as Mineral Spirits	10		43

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: Modified 8015

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

01/23/90 rw PAGE 1 OF 1

WORK ORD#: D901438
CLIENT: PAUL HORTON
GROUNDWATER TECHNOLOGY, INC.
4080-D PIKE LANE
CONCORD, CA 94520
PROJECT#: 203-680-5016.06
LOCATION: 404 MARKET STREET
OAKLAND, CA
SAMPLED: 01/18/90 BY: F. BEILER
RECEIVED: 01/18/90 BY: K. FILLINGER
ANALYZED: 01/21/90 BY: K. PATTON
MATRIX: AIR
UNITS: ug/L

TEST RESULTS

PARAMETER	MDL	SAMPLE #: 01 I.D. MWBINLET3		
Methane	20	<20		

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: GC TCD

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

01/23/90 jp PAGE 1 OF 1

WORK ORD#: D001493
CLIENT: PAUL HORTON
GROUNDWATER TECHNOLOGY, INC.
4080-D PIKE LANE
CONCORD, CA 94520
PROJECT#: 283-680-5016.06
LOCATION: 404 MARKET STREET
OAKLAND, CA
SAMPLED: 01/18/90 BY: F. BEILER
RECEIVED: 01/18/90 BY: K. FILLINGER
ANALYZED: 01/22/90 BY: R. CONDIT
MATRIX: AIR
UNITS: ug/L

TEST RESULTS

COMPOUND	MDL	LAB # I.D.#	01 MWBOUTLET1	02 MBINLET3
Bromodichloromethane	0.5		<0.5	<0.5
Bromoform	0.5		<0.5	<0.5
Bromomethane	0.5		<0.5	<0.5
Carbon tetrachloride	0.5		<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5
Chloroethane	0.5		<0.5	<0.5
2-Chloroethylvinyl ether	1.0		<1.0	<1.0
Chloroform	0.5		<0.5	<0.5
Chloromethane	0.5		<0.5	<0.5
Dibromochloromethane	0.5		<0.5	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5
Dichlorodifluoromethane	0.5		<0.5	<0.5
1,1-Dichloroethane	0.5		<0.5	<0.5
1,2-Dichloroethane	0.5		<0.5	<0.5
1,1-Dichloroethene	0.2		<0.2	<0.2
trans-1,2-Dichloroethene	0.5		<0.5	<0.5
1,2-Dichloropropane	0.5		<0.5	<0.5
cis-1,3-Dichloropropene	0.5		<0.5	<0.5
trans-1,3-Dichloropropene	0.5		<0.5	<0.5
Methylene chloride	0.5		<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5		<0.5	<0.5
Tetrachloroethene	0.5		<0.5	<0.5
1,1,1-Trichloroethane	0.5		<0.5	<0.5
1,1,2-Trichloroethane	0.5		<0.5	<0.5
Trichloroethene	0.5		<0.5	<0.5
Trichlorofluoromethane	0.5		<0.5	<0.5
Vinyl Chloride	1.0		<1.0	<1.0

MDL = Method Detection Limit.

METHOD: Modified ADDL002

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL ENVIRONMENTAL LABORATORIES, INC

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST 72-6441

CUSTODY RECORD

Project Manager: PAUL HORTON

Phone #: 6712387

FAX #:

Address: 4040 Market St. Oakland

Site location:

Project Number: 203680 5016.06

Project Name: Safety-Kleen/Oakl

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print): Frank Seiler

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO3	H2SO4	ICE	NONE	OTHER	Sampling: DATE	TIME
MW-8 Inlet 1			1			X								X	1/18/90	1240
MW-8 Outlet 1			1			X								X		1248
MW-8 Inlet 2			1			X								X		128
MW-8 Inlet 3			1			X								X		1228

ANALYSIS REQUEST

BTEX 602 ☐ 8020 ☐ with MTBE ☐,	BTEX/TPH Gas. 602/8015 ☐ 8020/8015 ☐ MTBE ☐	TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel	Product I.D. by GC (SIMDIS) ☐	Total Oil & Grease 413.1 ☐ 413.2 ☐ 503A ☐	Total Petroleum Hydrocarbons 418.1 ☐ 503E ☐	EPA 601 ☐ 8010 ☐ DCA only ☐	EPA 602 ☐ 8020 ☐	EPA 608 ☐ 8080 ☐ PCBs only ☐	EPA 610 ☐ 8310 ☐	EPA 624 ☐ 8240 ☐ NBS +15 ☐	EPA 625 ☐ 8270 ☐ NBS +25 ☐	EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐	TCLP Metals ☐ VOA ☐ Semi VOA ☐	EPA Priority Pollutant Metals ☐ HSL ☐	LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐	CAM Metals ☐ STLC ☐ TTLC	Corrosivity ☐ Flashpoint ☐ Reactivity ☐	METHANE
X	X															X
X	X															X
X	X															X
X	X															X

Received by: Date 1/18/90 Time 1

Received by: Date Time

Received by Laboratory: Date 1-18 Time 4:

Relinquished by Sampler: Date Time

Relinquished by: Date Time

Relinquished by: Date Time

SPECIAL HANDLING

24 HOURS ☐
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER 72 hrs (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
.FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Lab Use Only Storage Location

Lot #: Work Order #:

GROUNDWATER TECHNOLOGY, INC.

4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

July 10, 1990

Job No. 203 680 5016

Mr. Kwiyukor Madoshi
Department of Health Services
Toxic Substances Control Program
2151 Berkeley Way Annex 7
Berkeley, CA 94704

Dear Mr. Madoshi:

Groundwater Technology, Inc., on behalf of Safety-Kleen Corporation, is pleased to present this Workplan for Soil-Vent System (SVS) and Recovery-Well Installation. The workplan provides construction details for the SVS piping and the free-phase hydrocarbon recovery well which have recently been installed during underground storage tank replacement activities at the Safety Kleen facility located at 404 Market Street in Oakland, California.

This work plan covers only installation procedures. Construction of treatment facilities for resultant soil gas and free product, as well as regulatory permitting, operations and maintenance, and the monitoring program for the system, will be addressed in a separate work plan. The SVS and recovery well have been installed during tank replacement to minimize facility disruption due to construction activities.

If you have any questions regarding this workplan, please contact Ms. Anne Lunt of Safety-Kleen Corporation at (213) 831-3905 or me at (415) 671-2387.

Sincerely,
GROUNDWATER TECHNOLOGY, INC.

Paul D. Horton

Paul D. Horton
Project Manager

PDH:da

Enclosure

cc: Anne Lunt, Safety-Kleen Corporation
L501604N.RT

FILE COPY

REPORT OF UNDERGROUND STORAGE TANK REPLACEMENT ACTIVITIES AT THE SAFETY-KLEEN OAKLAND SERVICE CENTER OAKLAND, CALIFORNIA

SEPTEMBER 1990

GROUNDWATER TECHNOLOGY, INC.
CONCORD, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

REPORT OF UNDERGROUND STORAGE TANK REPLACEMENT ACTIVITIES AT THE SAFETY-KLEEN OAKLAND SERVICE CENTER OAKLAND, CALIFORNIA

SEPTEMBER 1990

Prepared for:

Safety-Kleen Corporation
P.O. Box 1429
San Pedro, CA 90733-1429

Prepared by:

GROUNDWATER TECHNOLOGY, INC.
4080-D Pike Lane
Concord, CA 94520

Jamie Bethell
Project Engineer

Richard M. Thomasser
Project Hydrogeologist

Allen B. Storm
Registered Geologist
NO. 4394

REGISTERED GEOLOGIST
ALLEN B. STORM
No 4394
Exp. 6-92
STATE OF CALIFORNIA

R5016B7.RT

GROUNDWATER TECHNOLOGY, INC.
4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

REPORT OF UNDERGROUND STORAGE TANK REPLACEMENT ACTIVITIES AT THE SAFETY-KLEEN OAKLAND SERVICE CENTER OAKLAND, CALIFORNIA

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REGISTERED GEOLOGIST
ALLEN B. STORM
No 4394
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STATE OF CALIFORNIA

R5016B7.RT

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REPORT OF UNDERGROUND STORAGE TANK REPLACEMENT ACTIVITIES AT THE SAFETY-KLEEN OAKLAND SERVICE CENTER OAKLAND, CALIFORNIA SEPTEMBER 1990

INTRODUCTION

Safety-Kleen Corporation (Safety-Kleen), retained Groundwater Technology, Inc. (GTI), to provide technical supervision of underground storage tank system replacement activities at the Safety-Kleen Service Center located at 404 Market Street in Oakland, California (Figure 1). This report describes the activities conducted by Groundwater Technology, Inc., and provides documentation regarding the procedures followed during the underground storage tank replacement.

SITE BACKGROUND

The Safety-Kleen Oakland Service Center has served as a distribution center for Safety-Kleen products since 1975. These products include mineral spirits solvent and other products for the automotive and food service industries. The mineral spirits solvent is stored on site in clean and used or "spent" condition. Three underground storage tanks (USTs) were installed in 1970 and 1971 to store the mineral spirits solvent. Two 6,000-gallon steel USTs were used to store the spent mineral spirits solvent prior to shipment to Safety-Kleen's recycling facility in Reedley, California. The third UST was a 10,000-gallon steel tank used to store clean mineral spirits. Figure 2 shows the site plan, and Figure 3 shows the location of the three old USTs.

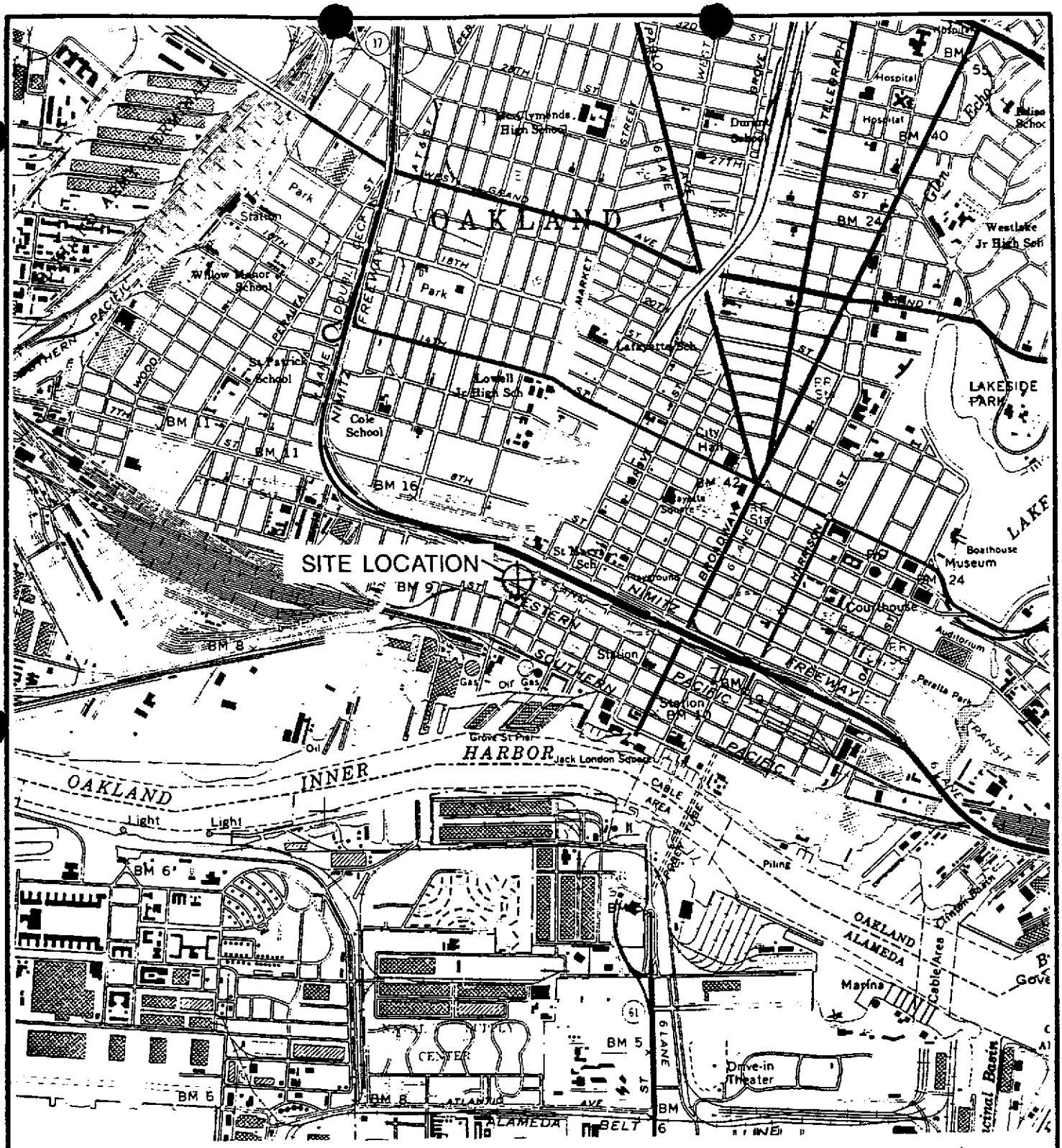


FIGURE 1
SITE LOCATION MAP

SAFETY-KLEEN
404 MARKET ST.
OAKLAND, CALIFORNIA

ML 5/90

GROUNDWATER TECHNOLOGY, INC.

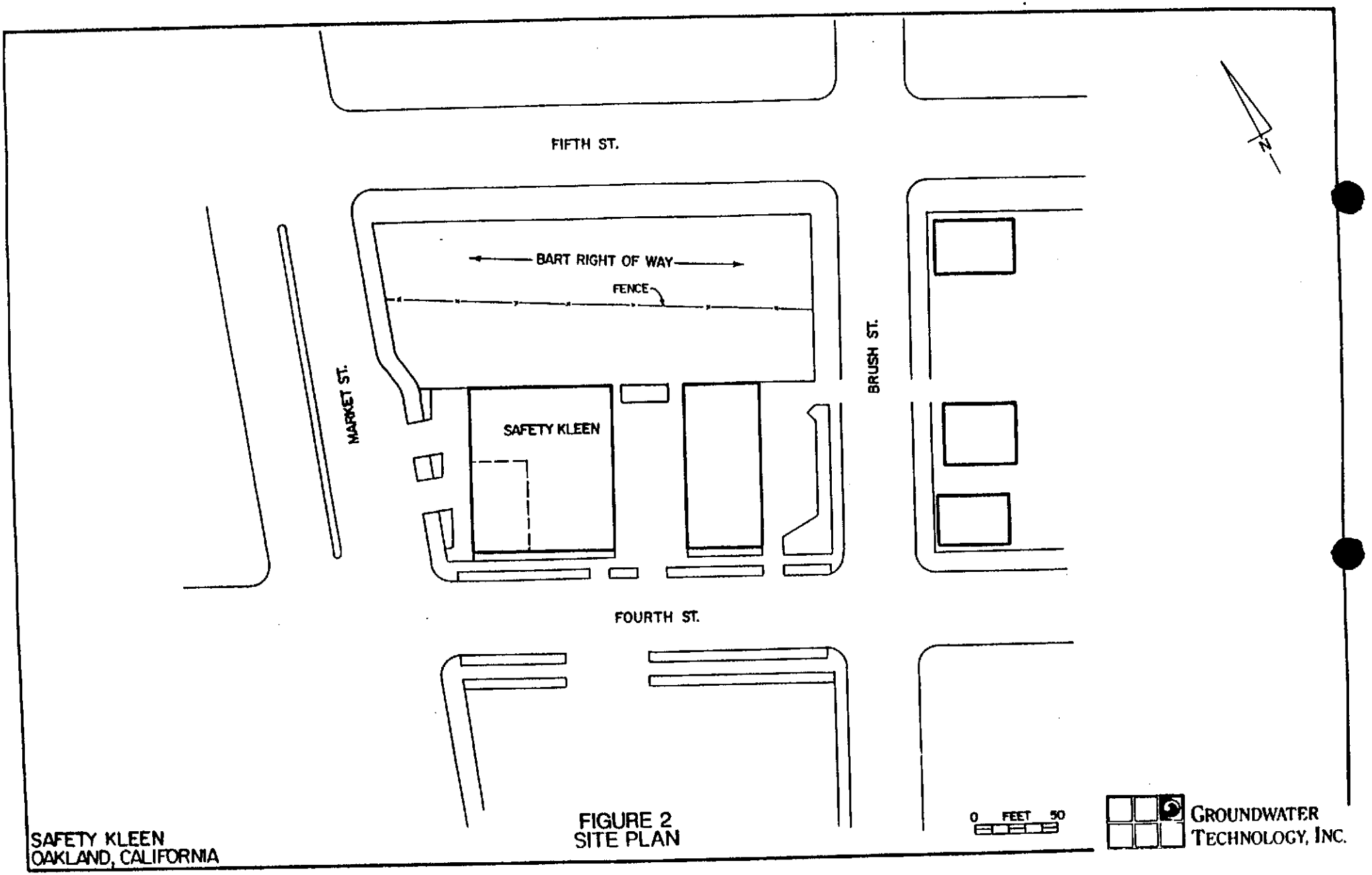


FIGURE 2
SITE PLAN

SAFETY KLEEN
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

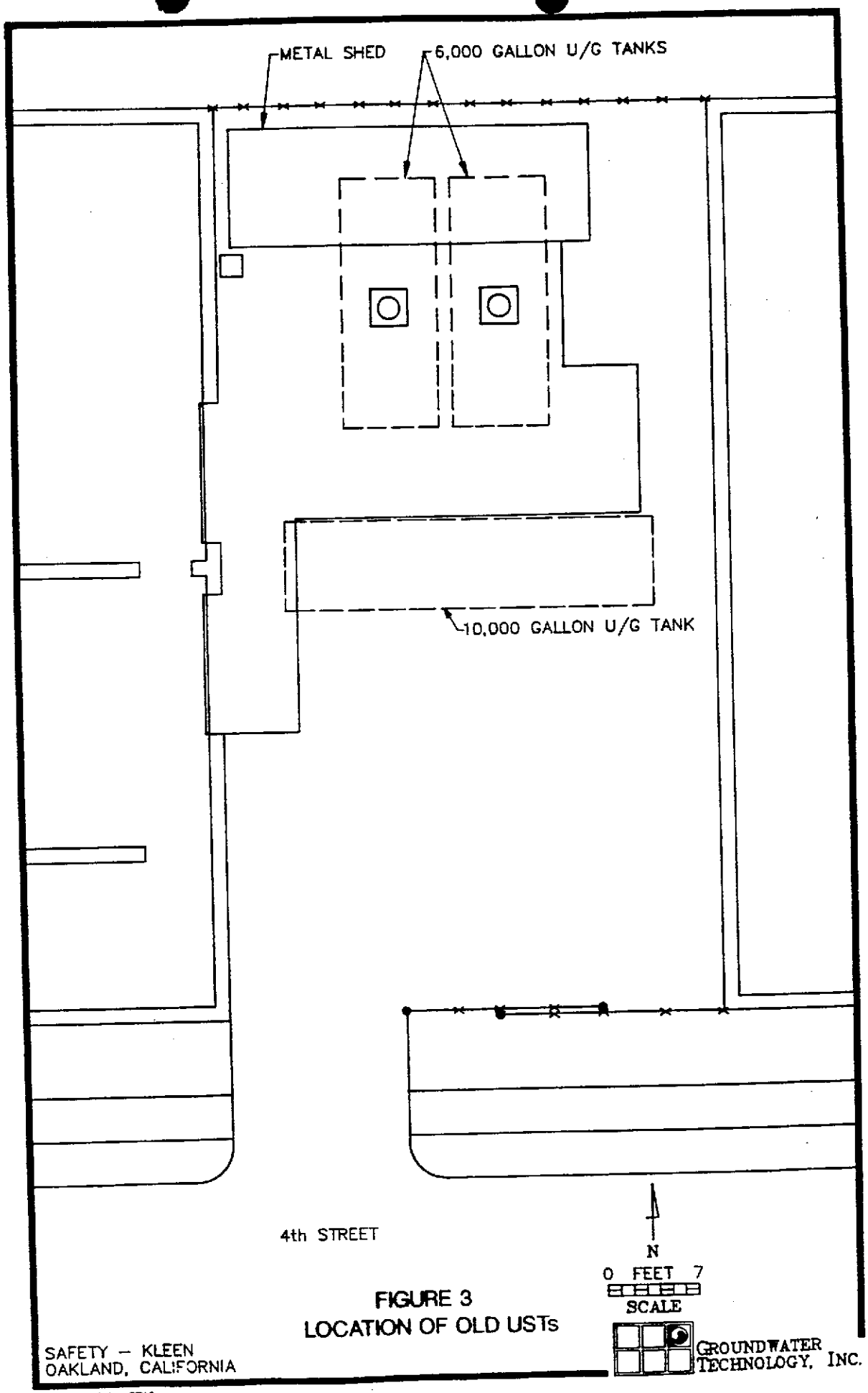


FIGURE 3
LOCATION OF OLD USTs

SAFETY – KLEEN
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

MARCH 7th, 1994 – REV.0

Results of site assessment conducted by Groundwater Technology, Inc. and others are summarized in the "Update Report of Additional Assessment, 404 Market Street, Oakland, California", dated June 1990. The assessment results indicated impacts on the subsurface soil and shallow groundwater by mineral spirits solvent and chlorinated organics. Measurable separate-phase mineral spirits product was observed in groundwater monitoring wells, and dissolved chlorinated organics were detected in samples collected from wells in the vicinity of the tank pit. Groundwater occurs at approximately 8 feet below grade and flows towards the south in the site vicinity.

SCOPE OF WORK

Although repairs were made to the underground storage tank system and subsequent tank integrity testing revealed the system to be tight, Safety-Kleen undertook the entire system upgrade due to tank ages.

Tank replacement plans included performing limited remedial activities and construction of remedial facilities to address the impacted soil and shallow groundwater. The remedial activities performed during tank replacement included excavation and disposal of impacted soil in the vicinity of the USTs and removal of floating separate-phase mineral spirits product during excavation dewatering. Remedial facilities constructed include soil-venting system piping for future extraction of soil vapors to remediate impacted soil and a product recovery well for future separate-phase mineral spirits extraction. These activities are described further in this report.

Safety-Kleen has recently acquired the property north of the Service Center facility (Figure 2). A review of property ownership records indicated that the property had been used in the past for two automobile service stations at which underground storage tanks were used. A geophysical survey of the property revealed the presence of a small underground storage tank apparently used for waste-oil storage. A detailed description of the tank removal activities are included in this report.

This report of tank replacement activities is being presented in the following manner:

- Site Supervision and Health and Safety Monitoring
- Underground Storage Tank Removal
- Installation of New UST System and Remedial Facilities
- Waste Oil Tank Removal

SITE SUPERVISION AND HEALTH AND SAFETY MONITORING

Groundwater Technology served as the overall site supervisor through the entire tank replacement program which occurred from May 31 through July 5, 1990. During this time, a representative of Groundwater Technology, Inc. was on site to oversee activities relating to tank removal, replacement, and remedial action. A chronology of the activities which took place during each day on site is included in Appendix A. This chronology summarizes key events and includes the names of persons visiting the site. In addition, photographs documenting the tank replacement process are included.

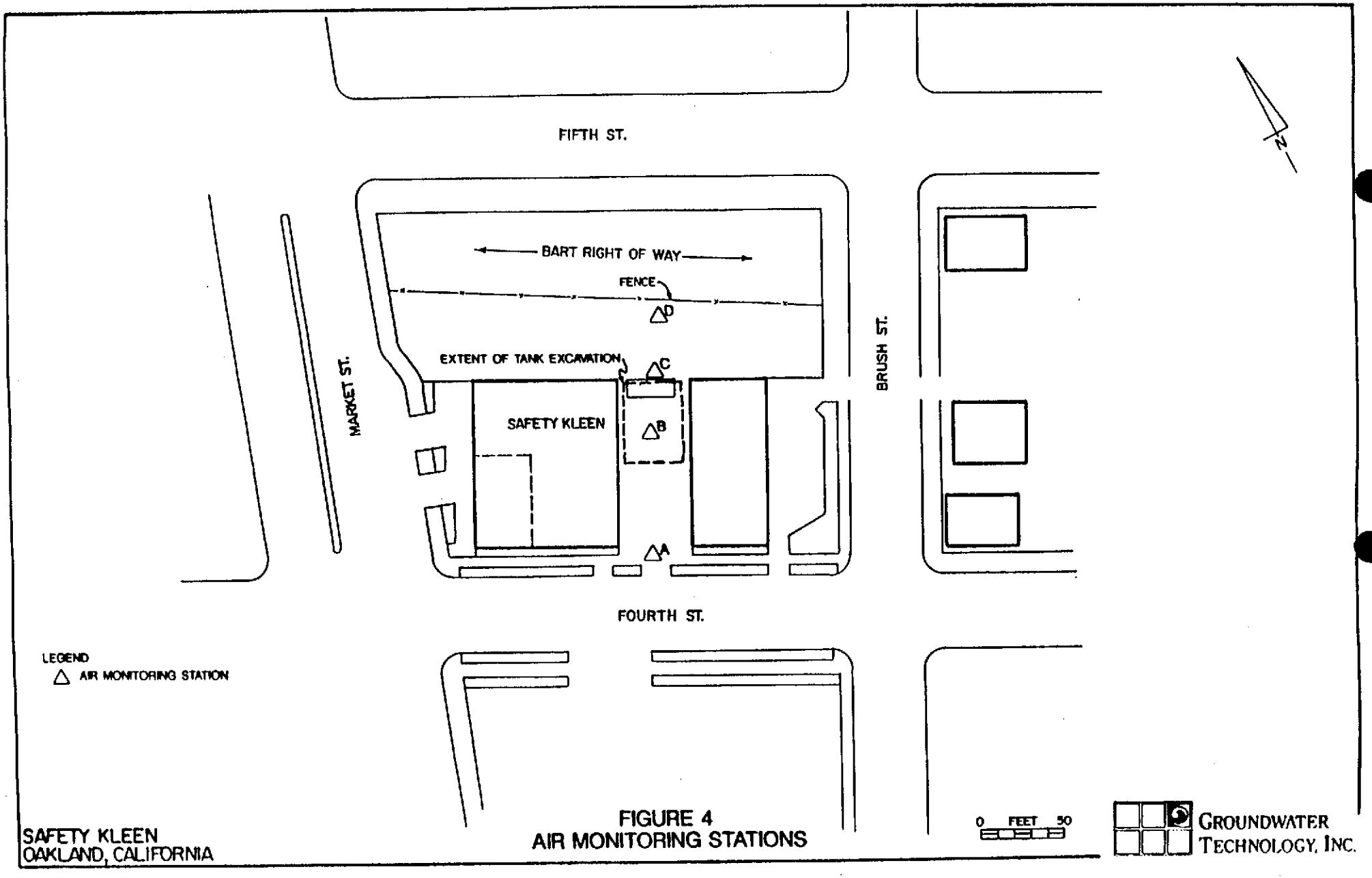
The Groundwater Technology, Inc. representative served as the on-site Health and Safety Coordinator, responsible to maintain compliance with the site specific Health and Safety Plan. The Plan, dated May 24, 1989 prepared by Groundwater Technology, Inc., provides the following information:

- Site Background
- Emergency Response Procedures
- Site Characterization Data
- Hazard Evaluation
- Site Chemicals of Concern
- Material Safety Data Sheets (MSDS)
- Site Health and Safety Requirements

Personnel working on site were given the opportunity to read the Health and Safety Plan, and were required to sign a statement that they would abide by the provisions of the Plan.

In addition to specific procedures that were outlined regarding proper tank excavation and removal, personnel protective equipment, and waste handling, the Plan set Action Levels for the site-worker breathing zone. To comply with the Plan, four air monitoring stations were chosen within the work area (Figure 4). Regular monitoring of these stations was performed using a photo-ionization detector. Appendix B contains the air monitoring data for the site while work was in progress.

The site Health and Safety Coordinator set the level of personnel protective equipment based on the conditions encountered during work activities, and in accordance with the



SAFETY KLEEN
OAKLAND, CALIFORNIA

FIGURE 4
AIR MONITORING STATIONS

GROUNDWATER TECHNOLOGY, INC.

Health and Safety Plan. The site Health and Safety Coordinator also was responsible to see that all activities were performed as specified by any required permits. Specific permits required are discussed further in the following sections of this report.

EXISTING UNDERGROUND STORAGE TANK REMOVAL

Activities relating to the removal of the three existing underground storage tanks took place between May 31 and June 12, 1990. The following sections describe the specific activities performed during the tank removal process.

TANK REMOVAL PERMITTING

Underground storage tank removal permits were obtained from the Alameda County Health Care Services Agency and The City of Oakland Fire Department.

The State of California Department of Health Services (DHS) allowed the tank replacement activities to proceed based upon Section 66389, Article 4 of Title 22, California Code of Regulations (CCR).

The Bay Area Air Quality Management District was notified per Regulation 8, Rule 40.

A permit was obtained from The East Bay Municipal Utilities District (EBMUD) for discharge of treated groundwater related to excavation dewatering. Excavation dewatering is discussed further in this report.

The above-referenced permits and notification letters are included in this report as Appendix C.

SURVEY OF ADJACENT STRUCTURES

A survey was performed on the Safety-Kleen and Ralph Johnson & Associates buildings by a California-licensed surveyor, due to their proximity to the proposed excavation. The purpose of surveying these structures was to provide documentation of existing building elevations, so that any settling which could potentially occur from excavation activities could be accurately evaluated. The results of the survey are included in this report as Appendix D.

SHORING DESIGN AND MODIFICATIONS

A shoring design for the tank replacement excavation was prepared by H.V. Anderson Engineers to comply with CCR Title 8, Chapter 4, Subchapter 4 - Construction Safety Orders. The type of shoring proposed was sheet-pile shoring. The design, procedures and calculations are included in Appendix E.

The initial design was revised twice based on site conditions. The first revision called for removal of the north end of the shoring because the existing 6,000-gallon tank extended further north than originally calculated. The second revision called for the sheets to be installed by means of excavation rather than by being mechanically driven. This change was required to reduce vibration in the adjacent Ralph Johnson and Associates facility. The revised shoring plans are included in Appendix E.

The shoring was installed prior to existing tank removal, and remained in place until after the new tanks were installed and the tank pit was backfilled to approximately 5 feet below grade.

EXCAVATION DEWATERING

The tank excavation was completed to approximately 13-feet below grade. Since shallow groundwater was encountered at a depth of approximately 8-feet below grade, excavation dewatering was required to allow for tank replacement activities. Existing groundwater monitoring data indicated that the water would be impacted by dissolved-phase volatile organics, and that separate-phase mineral spirits product would be encountered.

Using available hydraulic information from the site, the volume of water expected to be removed during the excavation process was estimated at approximately 30,000 gallons. A permit was obtained from EBMUD for discharge of this water to the sanitary sewer following removal of separate-phase product and treatment.

Groundwater and product that accumulated in the tank excavation was pumped into two 21,000-gallon portable Baker tanks for initial storage. Separate-phase product was skimmed from the Baker™ tanks and sent to the Safety-Kleen Corporation Recycle Center in Reedley, California. The water remaining in the tanks was then pumped through a series of granular activated carbon vessels to remove any dissolved-phase organics present. As specified in the EBMUD permit, periodic sampling was performed to verify system efficiency. The actual volume of water removed, treated and discharged was approximately 34,000 gallons. The amount of product removed equaled approximately 100 gallons.

The EBMUD discharge permit required a report describing the groundwater treatment and discharge activities. The report is included in this report as Appendix F.

TANK DECONTAMINATION AND DESTRUCTION

In preparation for tank removal, product and waste solvent were pumped from the three existing USTs on May 31, 1990. All materials generated in the excavation of the tanks and subsequent decontamination steps were sent to the Safety-Kleen Recycle Center in Reedley, California. On June 1, 1990, the tanks were desludged by a confined space entry team. EPA Level "B" personal protective equipment was required for the confined space entry into the tanks. Following desludging, the tanks were decontaminated by high pressure water washing, known as "hydroblasting". This activity was observed by Mr. K. Madoshi of the California Department of Health Services. Prior to removal each tank was inerted to reduce explosion potential, using dry ice. Inspector Dawson of the City of Oakland Fire Department was on site to observe the tank removal.

The two 6,000-gallon tanks were removed from the excavation on June 7, 1990 and transported off site to H&H Environmental Services for disposal. Mr. Madoshi of DHS arrived after the tanks had been removed, at that time he inspected the excavation. The 10,000-gallon tank was removed on June 8, 1990 and similarly transported off site for disposal.

The Certification of Tank Disposal provided by H&H Environmental Services is included in Appendix G.

SOIL SAMPLING

Eight soil samples were collected from the walls and bottom of the tank excavation following tank removal. Figure 5 shows the locations of the soil samples in relation to the tank excavation as well as the location of the removed tanks. Samples "Pit 1" through "Pit 6" were collected from the bottom of the excavation at a depth of 13 feet below grade. These samples were analyzed for TPH-as-mineral spirits by modified EPA Method 8015 and for aromatic and halogenated volatile organics by EPA Methods 8010/8020. In addition, sample "Pit 1" was also analyzed for California Assessment Metals (CAM) under Title 22 CCR. Two other samples identified as "East-End" and "West-End" were collected from a depth of 12 feet at either end of the 10,000-gallon tank from the sidewalls of the excavation. These samples were analyzed for TPH-as-mineral spirits, volatile organics by EPA Method 8240, and aromatic hydrocarbons by EPA Methods 5030/8020.

The results of soil sample analyses are summarized in Tables 1 through 3. Laboratory reports and Chain-of-Custody documentation is included in Appendix H.

EXCAVATED SOIL DISPOSAL

Excavated soils totaling 984 tons were stockpiled on the back lot and covered with plastic prior to disposal. Soil samples were collected from the stockpiled soils for characterization analyses.

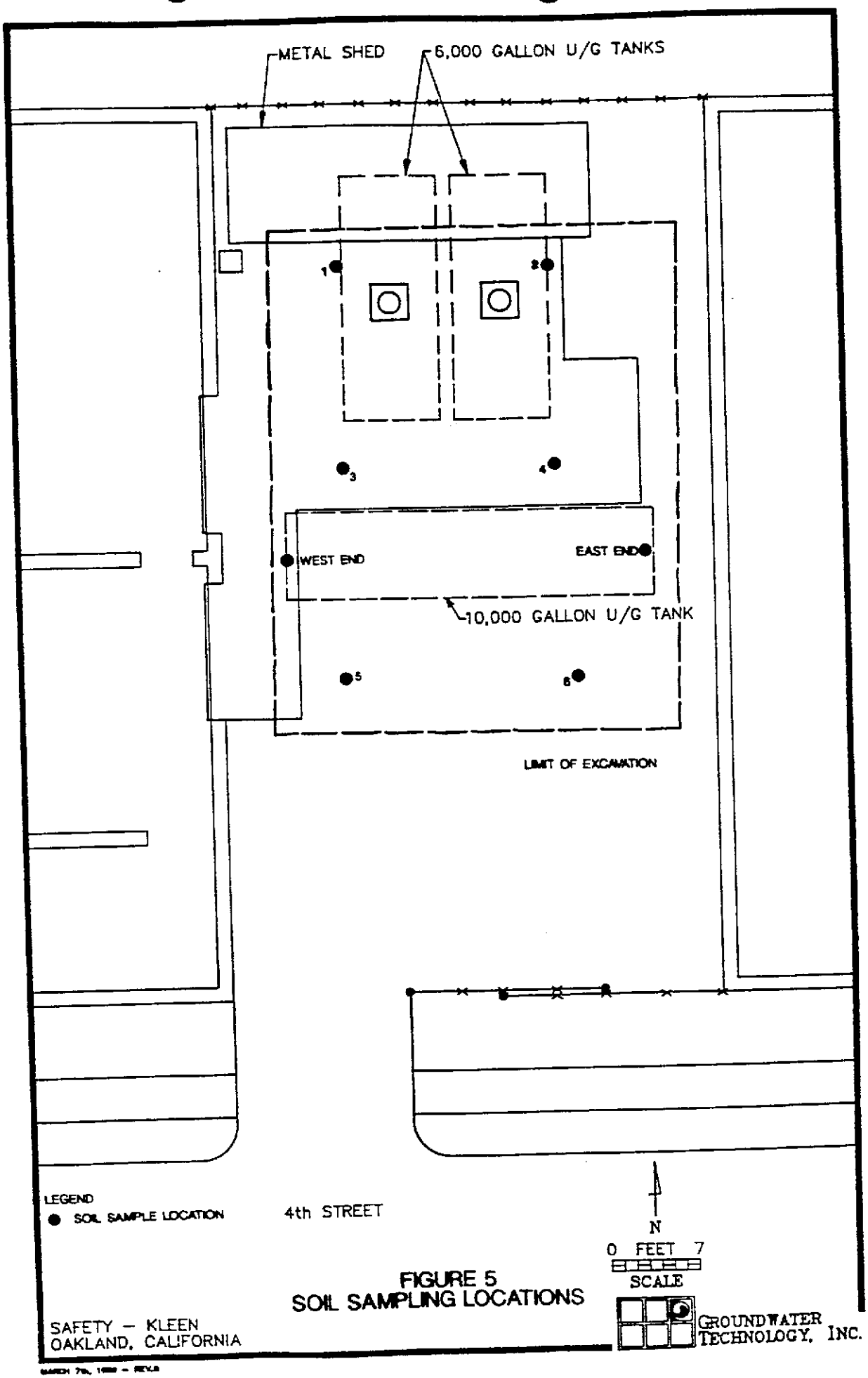


FIGURE 5
SOIL SAMPLING LOCATIONS

SAFETY – KLEEN
OAKLAND, CALIFORNIA

TABLE 1

LABORATORY ANALYTICAL RESULTS
FOR SOIL SAMPLES
EPA METHOD 8020 AND 8015
AROMATIC HYDROCARBONS AND TPH-AS-MINERAL SPIRITS
(parts per million [ppm])

SAMPLE I.D.	DEPTH (ft.)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENE	TPH-AS-MINERAL SPIRITS
Pit 1	13	<0.5	11.0	4.6	49	12,000
Pit 2	13	<0.5	18.0	5.1	84	9,500
Pit 3	13	<0.5	11.0	2.7	49	2,400
Pit 4	13	<0.5	7.6	3.1	50	10,000
Pit 5	13	<0.5	7.5	3.5	45	9,700
Pit 6	13	<0.5	11.0	5.1	78	12,000
EAST END	12	<0.1	6.0	<0.1	34	16,000
WEST END	12	0.01	4.0	<0.1	28	30,000

TPH = Total Petroleum Hydrocarbons

TABLE 2

LABORATORY ANALYTICAL RESULTS
FOR SOIL SAMPLES
CHLORINATED HYDROCARBONS
(results in parts per million [ppm])

SAMPLE I.D.	EPA METHOD	DEPTH (ft.)	CHLORO-BENZENE	1,2 DCB	1,3 DCB	1,4 DCB	1,1 DCE	T 1,2 DCE	PCE	1,1,1-TCA	TCE	1,1 DCA
Pit 1	8010	13.0	<0.5	12	1.2	6.5	1.3	1.5	7.8	7.3	1.7	<0.5
Pit 2	8010	13.0	<0.5	12	1.3	6.6	2.0	2.1	8.6	9.8	3.4	<0.5
Pit 3	8010	13.0	<0.5	15	1.0	6.6	0.4	3.9	0.71	3.0	<0.5	<0.5
Pit 4	8010	13.0	<0.5	16	1.1	7.3	0.3	5.8	<0.5	2.8	<0.5	<0.5
Pit 5	8010	13.0	1.0	15	0.9	6.0	0.5	3.8	1.1	3.6	45	<0.5
Pit 6	8010	13.0	0.6	20	1.6	9.8	0.4	4.0	0.7	3.3	78	<0.5
East End	8240	12.0	<0.25	15	7.8	8.2	<0.25	2.5	4.0	11.0	0.75	<0.25
West End	8240	12.0	<0.25	10	2.4	5.9	<0.25	1.9	8.4	17.0	<0.25	0.27

1,2 DCB = 1,2 Dichlorobenzene
1,3 DCB = 1,3 Dichlorobenzene
1,4 DCB = 1,4 Dichlorobenzene
1,1 DCE = Dichloroethene
T1,2 DCE = trans 1,2-Dichloroethene
PCE = Tetrachlorethane
1,1,1 TCA = 1,1,1 Trichloroethane
TCE = Trichloroethene
1,1 DCA = 1,1 Dichloroethane

TABLE 3

**LABORATORY ANALYTICAL RESULTS
FOR SOIL SAMPLE "PIT 1"
CAM Metals**
(Results in ppm)

TOTAL THRESHOLD LIMIT CONCENTRATION TEST RESULTS

PARAMETER	PIT 1
Antimony	<25
Arsenic	<25
Barium	39
Beryllium	<1
Cadmium	<3
Chromium	41
Cobalt	8
Copper	8
Lead	12
Mercury	<0.02
Molybdenum	<25
Nickel	<5
Selenium	<50
Silver	<5
Thallium	<13
Vanadium	22
Zinc	23

Excavated soils were transported to Port Costa Materials, Inc., in Port Costa, California for thermal destruction of volatile hydrocarbons in their rotary kiln. A copy of the laboratory reports and the Certificate of Destruction is included in Appendix I.

INSTALLATION OF NEW UST SYSTEM AND REMEDIAL FACILITIES

Installation of the new underground storage tank system began on June 12, 1990. This section of the report describes the new UST system and the remediation facilities installed to address residual soil contamination and separate-phase product extraction.

DESCRIPTION OF NEW UNDERGROUND STORAGE TANK SYSTEM

Two new 12,000-gallon double-walled Glasteel^{TM} underground storage tanks were installed in the excavation at the site. Sheets 1 through 3 (Appendix J) provide the details of tank construction, including a description of the manways and leak detection monitoring systems. One tank will be used to store clean mineral spirits solvent, and the other will be used for spent solvent storage.

The tanks were manufactured by Modern Welding Company, Inc., and the piping, which is steel with high-density polyethylene secondary containment, was manufactured by Total Containment, Inc. The Glasteel^{TM} tanks were produced in accordance with Underwriters' Laboratories, Inc. (UL) Standard 58 (Standard for steel underground tanks for flammable and combustible liquids) and the Association for Composite Tanks Standards ACT-100 (Specification for the fabrication of FRP-clad USTs). The tanks also meet, or exceed, the requirements of the National Fire Protection Association (NFPA) Standards 30 and 31, the Uniform Fire Code and National Standards Institute B137.1-1971. These standards are intended to prevent the collapse or rupture of tanks used for flammable liquid storage.

Prior to placing the tanks into the excavation, a 12- to 18-inch bed of pea-gravel aggregate was placed as a base for the tanks. Three concrete deadmen for each tank were placed in the excavation and then the tanks were lowered into the excavation. Hold-down straps (four per tank) were placed over the tanks and then attached to the deadmen.

The tank pit was backfilled to within 5 feet of the surface using pea-gravel. The manways and associated product lines were then installed in the excavation.

VAPOR AND GROUNDWATER EXTRACTION SYSTEMS

Prior to completion of tank pit backfilling, soil-vent system piping and a product recovery well were installed in the excavation to accomplish future remedial action objectives. These objectives are to remove any residual separate-phase product which accumulates in the tank pit and to remediate soil adjacent to the tank pit.

The Work Plan for Soil-Vent System and Recovery Well Installation, prepared by Groundwater Technology, Inc., dated June 15, 1990, was submitted to the DHS and the California Regional Water Quality Control Board, San Francisco Bay Region for review.

Figure 6 presents the location of the product recovery well and the soil-vent system layout in schematic. Sheet 4 (in pocket-Appendix J) provides details of the construction of these facilities.

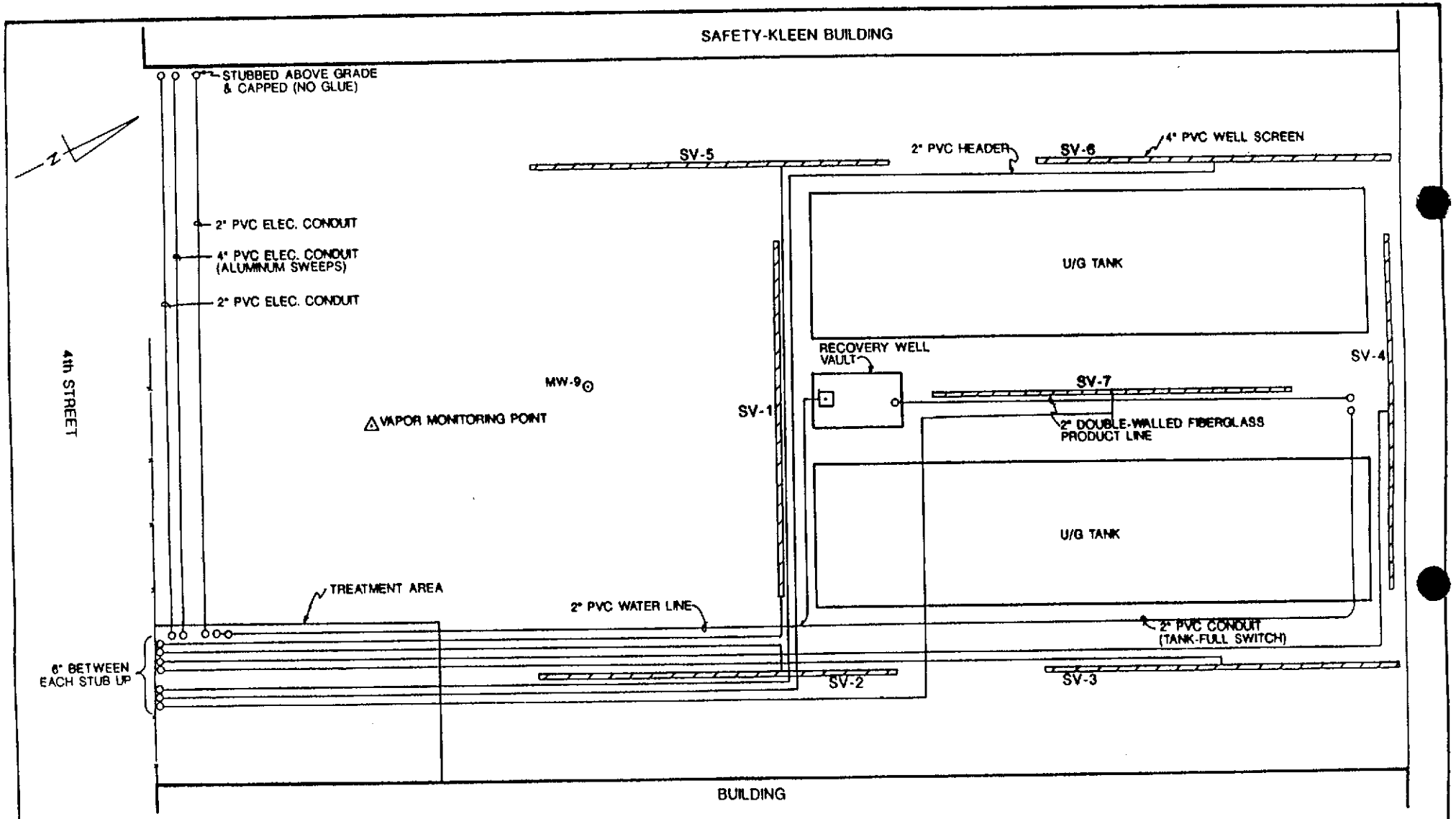


FIGURE 6
SCHEMATIC SOIL VENT SYSTEM LAYOUT

0 FEET 5

SAFETY-KLEEN
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

The recovery well was installed using an excavator to trench approximately 4-feet below the bottom of the tank excavation (total depth of 17 feet). A 10-inch diameter by 10-foot long stainless-steel screen with 0.02-inch wire-wrapped screen openings was welded to a 10-inch diameter by 5-foot long low-carbon steel blank casing. The casing and screen was placed in the excavation so that the top of the casing was 2-feet below grade. The annular space around the recovery well was then backfilled using pea-gravel. A 3-foot by 5-foot Forni vault was installed at the surface to protect the wellhead and house future pumping equipment.

The soil-vent piping consists of seven 20-foot lengths of 4-inch diameter slotted polyvinyl chloride (PVC) pipe manifolded in the southern portion of the site. The piping was placed horizontally at a depth of approximately 6-feet below grade in the tank pit backfill and, in the case of SV-1, in a trench 5 feet deep. The piping was covered with pea-gravel, polyethylene film, and geotextile material, and the tank pit was completely backfilled to the surface. The purpose of the polyethylene film is to direct the vacuum created by the future soil-vent system away from the tank pit, to areas where native materials contain residual contamination.

Electrical conduit, water and product lines necessary for future remedial efforts were installed between the recovery well vault, the treatment area, and sources of electrical power for the facility (See Figure 6 and Sheet 4).

COMPACTION TESTING AND RESURFACING

On June 28, 1990 after finishing backfilling of the tank pit and preparing the surface for the concrete slab, compaction testing was conducted by Kleinfelder and Associates. The Safety-Kleen specifications called for 95 percent compaction or greater. A total of four tests were conducted with a Campbell MC-2 gauge. The primary backfill material consisted of 1/8-inch to 3/4-inch naturally rounded aggregate (pea-gravel). However, the final 24 inches consisted of 3/4-inch aggregate base-rock. The results of the tests yielded a 95.25 percent average compaction. A copy of the test results is included in Appendix K.

The area above the tanks was resurfaced with 6 inches of steel reinforced concrete.

TANK INTEGRITY TESTING

The newly installed tanks were pressure tested on July 2, 1990 by Timmerman Engineering Construction. Prior to tank testing, the tanks were filled with water. Both tanks tested tight using the Petro-Tite test method. A copy of the tank testing report is included in Appendix L.

WASTE OIL TANK REMOVAL

On July 2, 1990, the location of the small capacity underground tank, found during a previously conducted geophysical survey of the property north of the Oakland Service Center, was determined and excavation began. Upon uncovering the top of the tank, a sample of the sludge from inside the tank revealed that

it was used in the past for waste oil storage. The tank was removed on July 5, 1990, and transported to H&H Environmental Services for disposal. Soil samples were collected from the native soil below the tank.

A report dated September 11, 1990 was prepared describing the waste oil tank removal including soil sample laboratory analytical results. This report is included as Appendix M.

CLOSURE

This concludes the Report of Underground Storage Tank System Replacement Activities at the Safety-Kleen Oakland Service Center. Groundwater Technology, Inc. hopes that this report meets Safety-Kleen's requirements at this time. If you have any questions or comments please call our Concord office at (415) 671-2387.

APPENDIX A
CHRONOLOGY OF EVENTS

RE: Safety Kleen, Oakland Facility
Chronological List of Events
By Jamie Bethell
Field Supervisor

Date:

5-31-90 Thursday

Met with key project personnel:

Anne Lunt, Safety Kleen, Regional Engineer
Jim Knous, Safety Kleen, Branch Manager
John Dees, Universal Engineering, Site Supervisor
Paul Horton, Groundwater Technology, Inc.
Project Manager
Jamie Bethell, Groundwater Technology, Inc.
Site Project Manager

Removed sludge and debris from loading/unloading shed, see Figure 1;

Removed loading/unloading shed and transported to north north end of site, see Figures 2 and 3;

Unloaded and stockpiled deadman;

Reviewed shoring plan;

Removed product and waste from existing tanks;

Set safety standards for site;

Prepared site for shoring;

Monitored site with organic vapor monitor (OVM);

Scheduled confined space entry personnel for desludging tank;

Stored contaminated equipment on visqueen, see Figure 4.

6-1-90 Friday

Calibrated OVM and monitored site;

Set-up decontamination area;

Met with M. Mougakis, Universal Engineering of confined space entry team and defined workscope;

Removed all gauging and monitoring equipment from tanks;

Held safety meeting, see Figure 5;

Desludged tanks by confined space entry personnel, see Figure 6;

Cleaned tanks by hydroblasting, see Figure 7;

Met with Mr. K. Madoshi, Department of Health Services, (DHS);

Initiated shoring, see Figure 8;

Supervised field operations.

6-2-90 Saturday

Calibrated OVM and monitored site;

Set shoring;

Excavated soils to set shoring;

Monitored soils during excavation;

Contacted security for schedule changes;

Monitored areas off site with OVM;

Calculated amounts of soils to be removed;

Notified A. Lunt of progress and soil volume be excavated;

Supervised field operations;

Noticed product coming into shoring trench, see Figure 9;
Prepared area for stockpiling soils.

6-3-90 Sunday

Calibrated OVM and monitored site;

Contacted Local Security Services, problems with security;

Set shoring;

Supervised field operations;

Monitored soils excavated for shoring placement.

6-4-90 Monday

Calibrated and monitored site with OVM;

Built berm around soils;

Cut concrete pad atop tanks;

Stopped all shoring activities,

Met with Ralph Johnson of Ralph Johnson and Associates:
RE: Damage to inventory from vibrations of setting shoring;

Removed concrete atop tanks;

Monitored soils beneath concrete;

Released Universal Engineering crew early;

Met with Ralph Johnson:
RE: Alternate methods of setting shoring;

Sampled stockpiled soils;

Reviewed soil vent system materials, specifications;

Worked on alternate shoring plan;

Met with Ralph Johnson and Ray Sherman, Lawyer;
RE: Future shoring activities.

Met with P. Horton and C. Prokop;
RE: Site activities and soil vent design.

6-5-90 Tuesday

Calibrated OVM and monitored site;

Designed new shoring plan;

Contacted:
1) D. Byrne, Alameda County Health Agency (ACHA)
2) Inspector Hallert, Oakland Fire Department, (OFD)
3) K. Madoshi, DHS
4) S. Spears, City of Oakland Building Department.

Reviewed waste oil tank removal plan;

Scheduled existing tank removal activities;

Inspected carbon canisters for filtration systems upon arrival from vendor;

Set shoring by excavation method, see Figure 10;

Supervised field operations;

Sampled excavated soils, see Figure 11.

6-6-90 Wednesday

Calibrated OVM and monitored site;

Removed soils atop the two hazardous waste tanks, see Figure 12;

Prepared decontamination area for field personnel, see Figures 13 and 14;

Contacted Local Security, security problems;

Monitored soils and air with OVM during removal of soil above UST's;

Assessed design of soil vent system;

Removed monitoring wells No.7, SK-1, and SK-3 during excavation.

Met with Gary Long and reviewed site;

Supervised field operations, see Figure 15;

Received wastewater discharge permit;

Investigated permitting for waste oil tank removal.

6-7-90 Thursday

Calibrated OVM and monitored site;

Prepared decontamination area;

Monitored tanks with OVM and LEL, see Figure 16;

Inerted tanks with dry ice, see Figure 17;

Met with: 1. K. Madoshi DHS
2. Inspector Dawson, OFD;

Removed two 6,000 gallon UST's;

Inspected the UST's;

Transported tanks off site to disposal facility, H & H Environmental Services, see Figure 18;

Removed concrete and soil from atop virgin mineral spirits tank, see Figure 19;

Supervised field operation;

6-8-90 Friday

Calibrated OVM and monitored site;

Prepared decontamination area;

Inserted tank with dry ice;

Monitored tank with LEL and OVM;

Met with: 1. Inspector Dawson, OFD
2. D. Byrne, ACHA;

Sampled beneath the tank, see Figure 20;

Removed one 10,000 gallon UST, see Figure 21;

Inspected UST;

Constructed groundwater filtration system;

Relayed laboratory analysis on excavated soils, 6-5-90, to A. Lunt and Universal Engineering;

Received recovery well vault;

Scheduled security;

Supervised field operations.

6-9-90 Saturday

Calibrated OVM and monitored site;

Prepared decontamination area;

Constructed additional security fence for truck parking;

Constructed additional components for shoring support, see Figure 22;

Modified design of soil vent system to incorporate new changes;

Excavated and stockpiled contaminated soils;

Supervised field operations.

6-10-90 Sunday

Calibrated OVM and monitored site;

Prepared decontamination area;

Gauged on site monitoring wells;

Excavated and stockpiled contaminated soils;

Constructed sump in southwest corner of excavation for test purposes, see Figure 23;

Supervised field operations.

6-11-90 Monday

Calibrated OVM and monitored site;

Met on site with P. Horton, R. Thomasser, C. Prokop
RE: Soil Vent System Installation, and Recovery Well Installation;

Monitored soils being excavated;

Tabulated and monitored groundwater flow into test sump, see Figure 23;

Excavated to required depth, see Figure 24;

Constructed groundwater filtration system, see Figures 25 & 26;

Built berm about soil pile;
Supervised field operations.

6-12-90 Tuesday

Calibrated OVM and monitored site;

Sampled soils from excavation floor, approximately thirteen feet six inches in depth, see Figure 27;

Installed dewatering sump, see Figure 28;

Monitored soils being excavated;

Shut down filtration system due to leakage from carbon canister;

Installed interim recovery well, see Figure 29;

Started dewatering, see Figure 30;

Supervised field operations;

Installed pea gravel base in excavation;

Verified slope in trench, 2°to 3°;

Sampled filtration system's effluent.

6-13-90 Wednesday

Calibrated OVM and monitored site;

Picked up recovery well parts;

Placed deadman in excavation, see Figure 31;

Conducted holiday test on tanks, see Figure 32;

Placed tanks in excavation, see Figures 33, 34 and 35;

Inspected installation, see Figure 36 and 37;

Removed tanks from excavation and turned them 180°, then placed them back in excavation;

Restarted filtration system;

Placed pea gravel around base of tanks, see Figures 38 and 39;

Constructed recovery well, see Figure 40;

Anchored tanks to deadman, see Figure 41;

Supervised field operation.

6-14-90 Thursday

Calibrated OVM and monitored site;

Installed recovery well, see Figure 42;

Built soil vent system's subgrade components;

Continued placement of pea gravel about tanks, see Figures 43 and 44;

Supervised field operations.

6-15-90 Friday

Calibrated OVM and monitored site;

Met with K. Folks, EBMUD, EBMUD sampled effluent from filtration system;

Installed soil vent system's subgrade components, see Figure 45;

Placed pea gravel atop soil vent system, see Figure 46;

Supervised field operations.

Installed geotextile fabric/visqueen/geotextile fabric covering, see Figure 47;

Placed pea gravel atop covering, see Figure 48.

6-16-90 Saturday

Checked site for security;

Checked dewatering and filtration system.

6-17-90 Sunday

Checked site for security;

Checked dewatering and filtration system.

6-18-90 Monday

Calibrated OVM and monitored site;

Installed trenches for soil vent system connection piping, see Figures 49 and 50;

Initiated direct discharge from carbon canister filtration system to sewer;

Resolved security problems;

Met with Ralph Johnson and Associate's office manager, RE: Removal of shoring;

Supervised field operations.

6-19-90 Tuesday

Calibrated OVM and monitored site;

Sampled filtration system's effluent;

Met with J. Henry of Ralph Johnson and Associates, RE: Removal of shoring;

Sketched and documented site for as builts;

Scheduled temporary help personnel;

Stopped dewatering activities.

6-20-90 Wednesday

Calibrated OVM and monitored site;

Coordinated temporary help activities;

Met and updated geologist;

Monitored with OVM areas where shoring was being pulled;

Supervised field operations.

Started removal of shoring, see Figure 51;

Installed containment sumps on tanks, see Figures 52 and 53.

6-21-90 Thursday

Calibrated OVM and monitored site;

Removed dewatering equipment from excavation;

Constructed new berm about soil pile;

Installed trench for UST's vent line and soil vent piping, see Figure 54;

Supervised field operations.

6-22-90 Friday

Installed soil vent system piping;

Removed remainder of shoring;

Monitored area where shoring was being pulled with OVM;

Coordinated temporary help (glass catchers) activities;

Scheduled inspections for UST air tests;

Changed source tank to filtration system from Baker 1 to Baker 2;

Installed vent lines to UST;

Started installing product piping, see Figure 55;

Supervised field operation;

Installed soil vent system piping, see Figures 56 through 60.

6-23-90 Saturday

Met with G. Stout of Local Security at site to check security at site.

6-24-90 Sunday

Checked security at site.

6-25-90 Monday

Calibrated OVM and monitored site;

Surveyed site, see Figure 61;

Met with E. Young and C. Dee about contractual agreement and change orders;

Prepared recovery well vault for installation;

Completed installation of piping, see Figure 62;

Supervised field operation;

Cleaned dewatering storage tank, Baker 1.

6-26-90 Tuesday

Monitored site with OVM;

Installed trench for electric feeds to treatment compound, also see Figure 60;

Met with Inspector Hallert OFD and reviewed UST installation;

Tested UST's, failed waste tank, passed raw product tank;

Stopped discharge of treated groundwater to sewer;

Supervised field operations.

6-27-90 Wednesday

Monitored site with OVM;

Restarted discharge of treated groundwater;

Met with Inspector Hallert, OFD;

Tested tank and product lines with air; passed;

Tested hydrostatically six (6) containment sumps;

Met with J. Smith, EBMUD to review and sample discharge of filtration system;

Sampled discharge of filtration system;

Completed and passed hydrostatic test on six (6) containment sumps;

Tested secondary containment on piping; passed;

Met with Inspector G. Doyle, City of Oakland Building Department, RE: Road usage;

Decommissioned filtration system;

Formed and poured concrete pad for recovery well vault, see Figures 63, 64 and 65;

Released one of the dewatering tanks, Baker 1;

Reviewed project accounting statement;

Supervised field operations.

6-28-90 Thursday

Monitored site with OVM;

Sketched piping schematic for as builts;

Installed recovery well vault, see Figures 66 and 67;

Completed backfilling of excavation with pea gravel;

Connected piping from recovery well vault to new waste tank, see Figure 68;

Connected and sealed final section of manways on tanks, see Figure 69;

Initiated backfilling and compaction of "AB" rock, see Figures 70 and 71;

Met with Ralph Johnson and Associates,
RE: Check on vibrations from compacting machine;

Tested compaction of fill, passed, see Figure 72;

Set forms for concrete slab;

Set rebar, see Figure 73;

Supervised field operations.

6-29-90 Friday

Monitored site with OVM;

Set rebar, see Figure 74;

Completed pour and finished concrete, see Figure 75;

Supervised field operations.

7-2-90 Monday

Inspected concrete work;

Staked out location of waste oil tank;

Filled new tanks with water for testing;
Moved loading/unloading shed to concrete slab, see Figure 76;

Tested tanks using Petro-Tite, passed, see Figure 77;

Met with Mr. Madoshi, DHS and reviewed present work and soil piles;

Uncovered waste oil tank, see Figure 78;

Supervised field operations.

7-3-90 Tuesday

Calibrated OVM and LEL;

Monitored site, waste oil tank excavation and waste oil tank;

Sampled sludge from waste oil tank;

Started installing piping to and within unloading/loading shed;

Supervised field operations.

7-4-90 Wednesday

Holiday

7-5-90 Thursday

Calibrated OVM and LEL;

Monitored site and waste oil tank;

Removed waste oil and sludge from tank, see Figures 79, 80, and 81;

Met with Inspector Dawson, OFD;

Met with D. Byrne, ACHA;

Tested waste oil tank with LEL, acceptable;

Removed waste oil tank, see Figure 82;

Transported tank to H & H Environmental Services for disposal;

Inspected excavation for contamination;

Sampled soil beneath waste oil tank;

Backfilled and compacted excavation;

Continued installation of piping;

Removed the second dewatering tank, Baker II, from site;

Supervised field operations.

7-6-90 Friday

Installed electric wiring for pumps, high level alarms, and leak detection sensor;

Tested leak detection sensors;

Installed ball float valves in USTs;

Continued installation of piping;

Supervised field operations.

7-9-90 Monday

Sampled soil from stockpiled soils;

Inspected and documented leak detection equipment;

Continued installation of piping in loading/ unloading shed;

Installed drum washers into dumpsters, see Figure 83;

Supervised field operations.

7-10-90 Tuesday

Installed dumpsters into shed, see Figure 84;

Formed and poured concrete pad for treatment compound;

Continued installation and hook-up of piping to drumwashers;

Installed leak detection, high level alarm, and mineral spirits pump control panels;

Supervised field operations.

7-11-90 Wednesday

Continued installation of piping into loading/unloading dock area, see Figure 85;

Documented and sketched equipment for as builts;

Met with E. Young to review site work;

Contacted D. Byrne of ACHA to appraise him of sites progress and final site inspection;

Supervised field operations.

7-12-90 Thursday

Tested and troubleshot UST system alarms;

Met with J. Knous and reviewed UST systems;

Met with P. Horton and reviewed project;

Sampled soil from stockpiled soils.

Completed piping hook-up to dumpsters and shed, see Figure 86.

APPENDIX D
SURVEY OF ADJACENT STRUCTURES

APPENDIX E
SHORING DESIGN AND MODIFICATIONS

90-15

H. V. ANDERSON ENGINEERS

HA UNIVERSAL ENGINEERING

SAFETY-KLEEN JOB

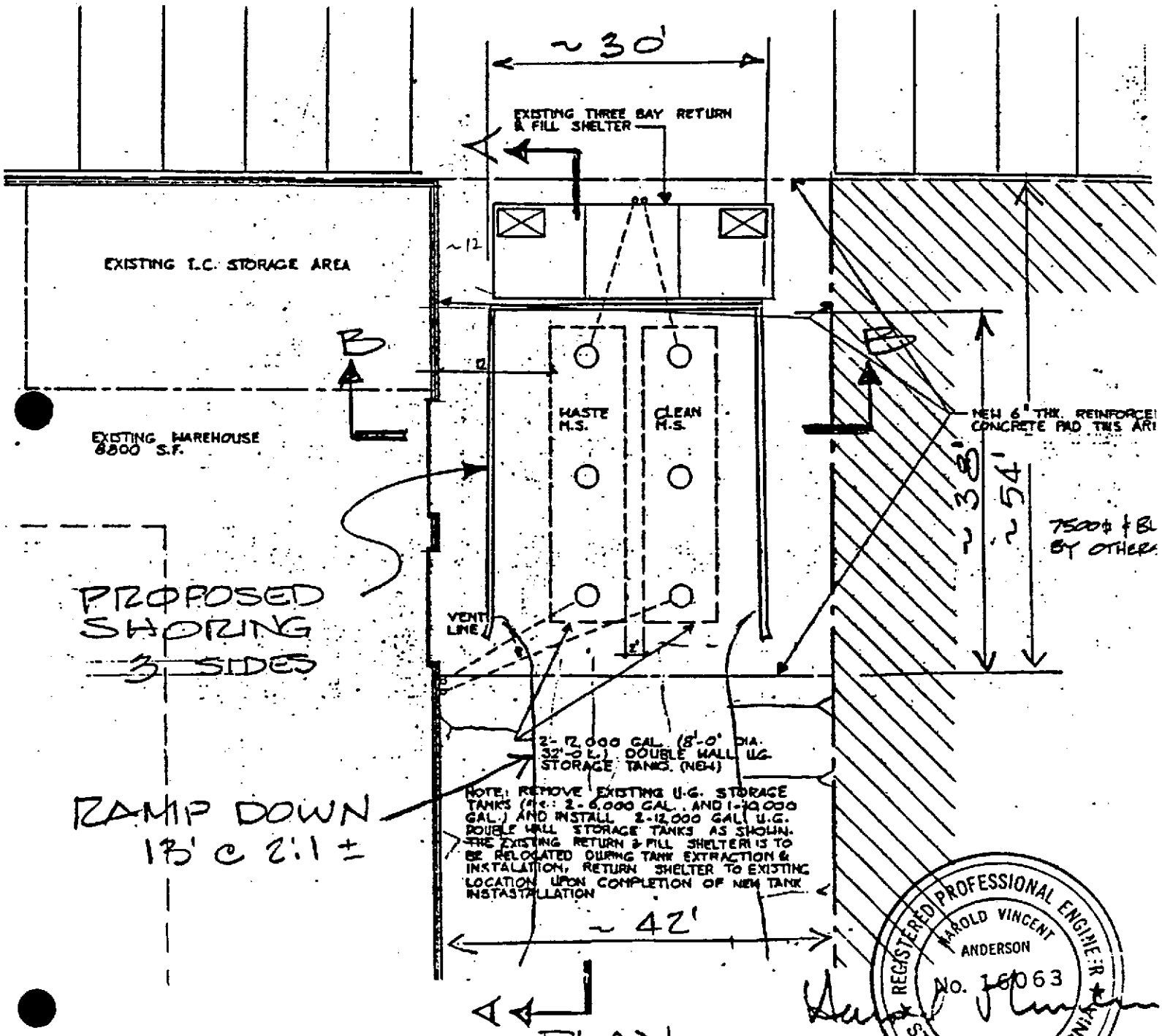
Investigations & Reports / Conceptual Planning / Design Reviews / Construction Engineering

5/25/9.

SHEET 1 OF 8

SHORING DESIGN FOR REMOVAL & REPLACEMENT OF TANKS

1. PROPOSED INSTALLATION:



PLAN

1/16" ~ 1'-0

REGISTERED PROFESSIONAL ENGINEER HAROLD VINCENT ANDERSON No. 16063 CIVIL STATE OF CALIFORNIA

EXP. 6/30/93

HA

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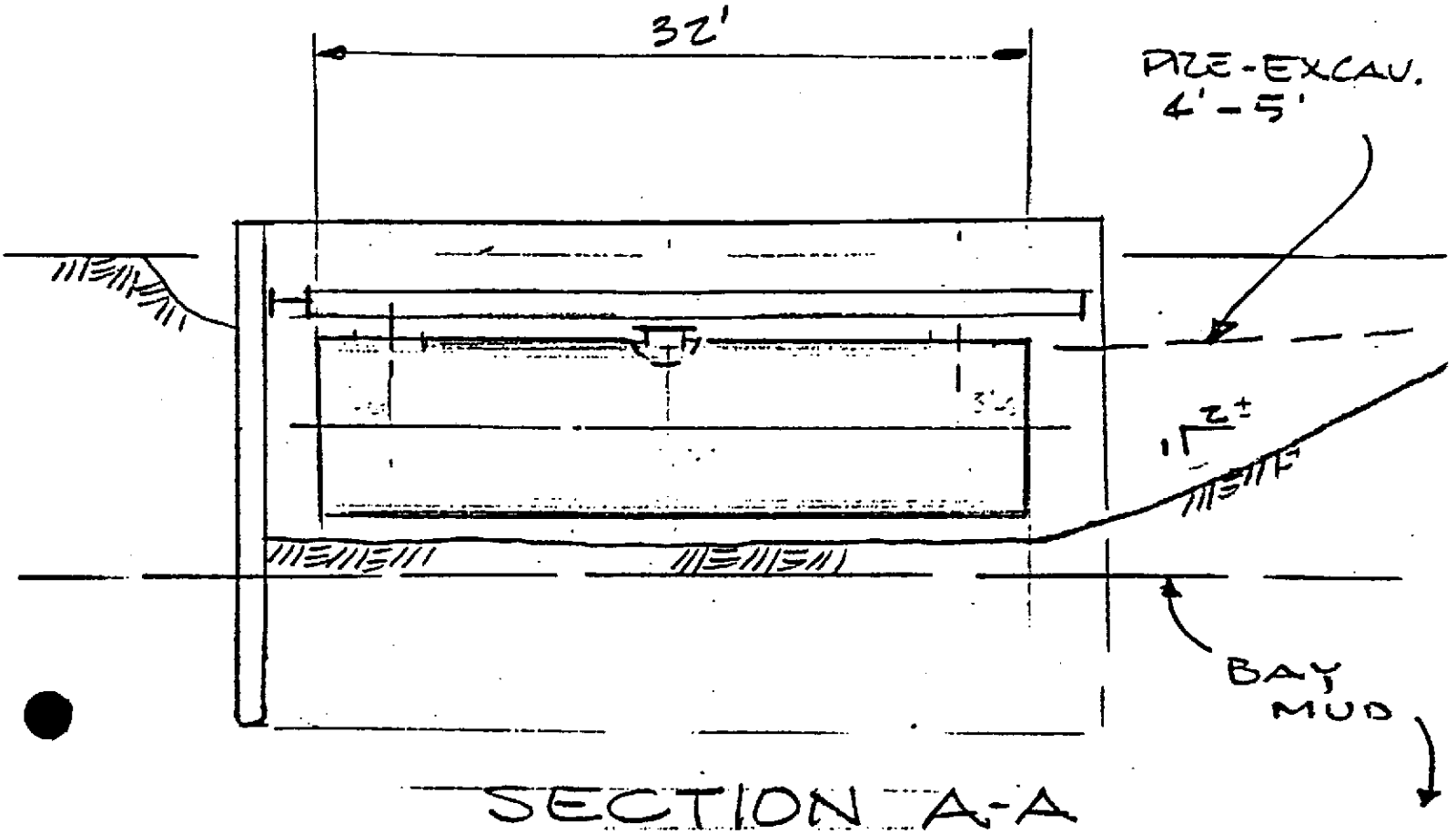
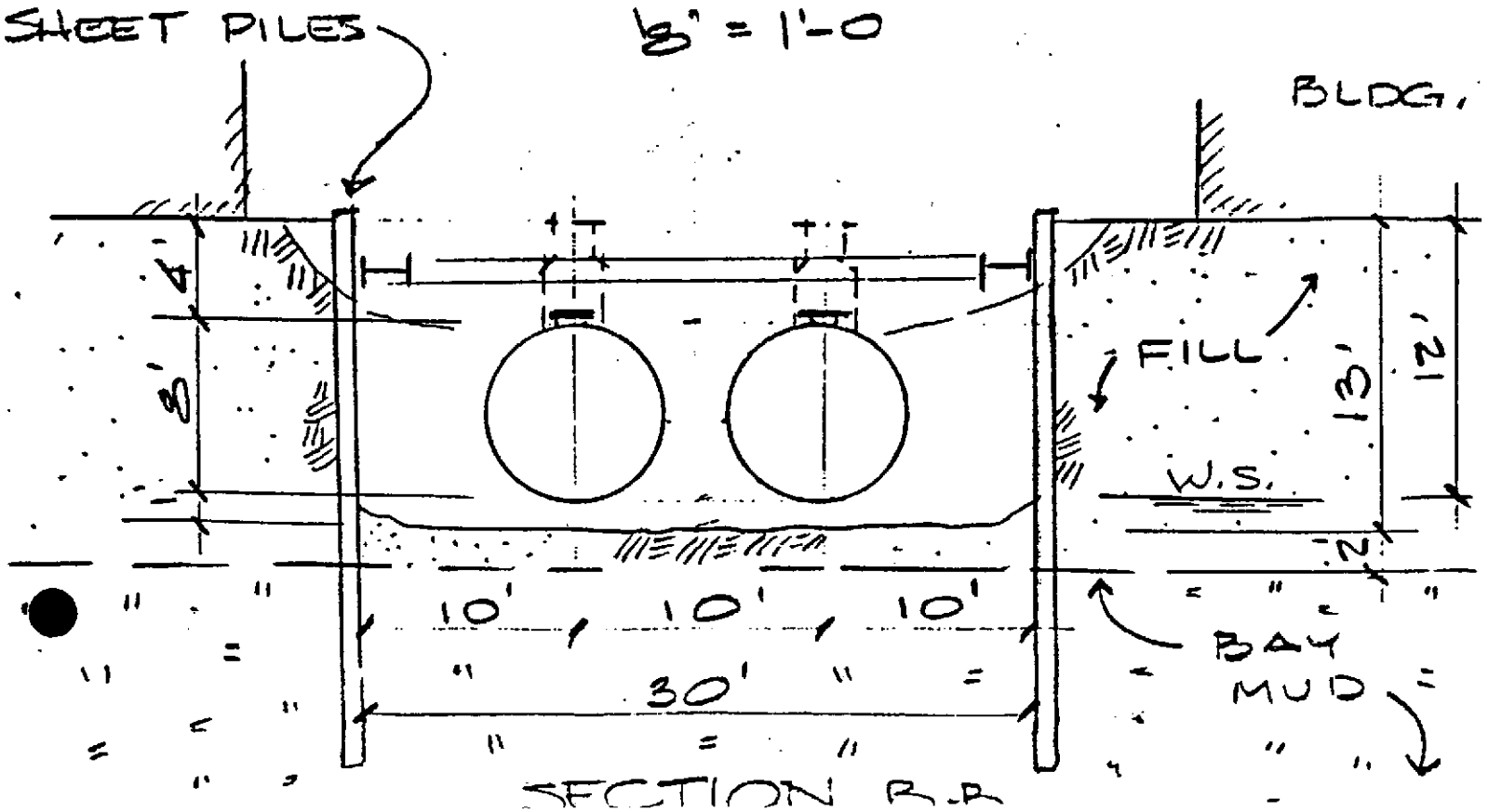


SECTION A-A

3/8" = 1'-0



SECTION B-B

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2. PROCEDURE :

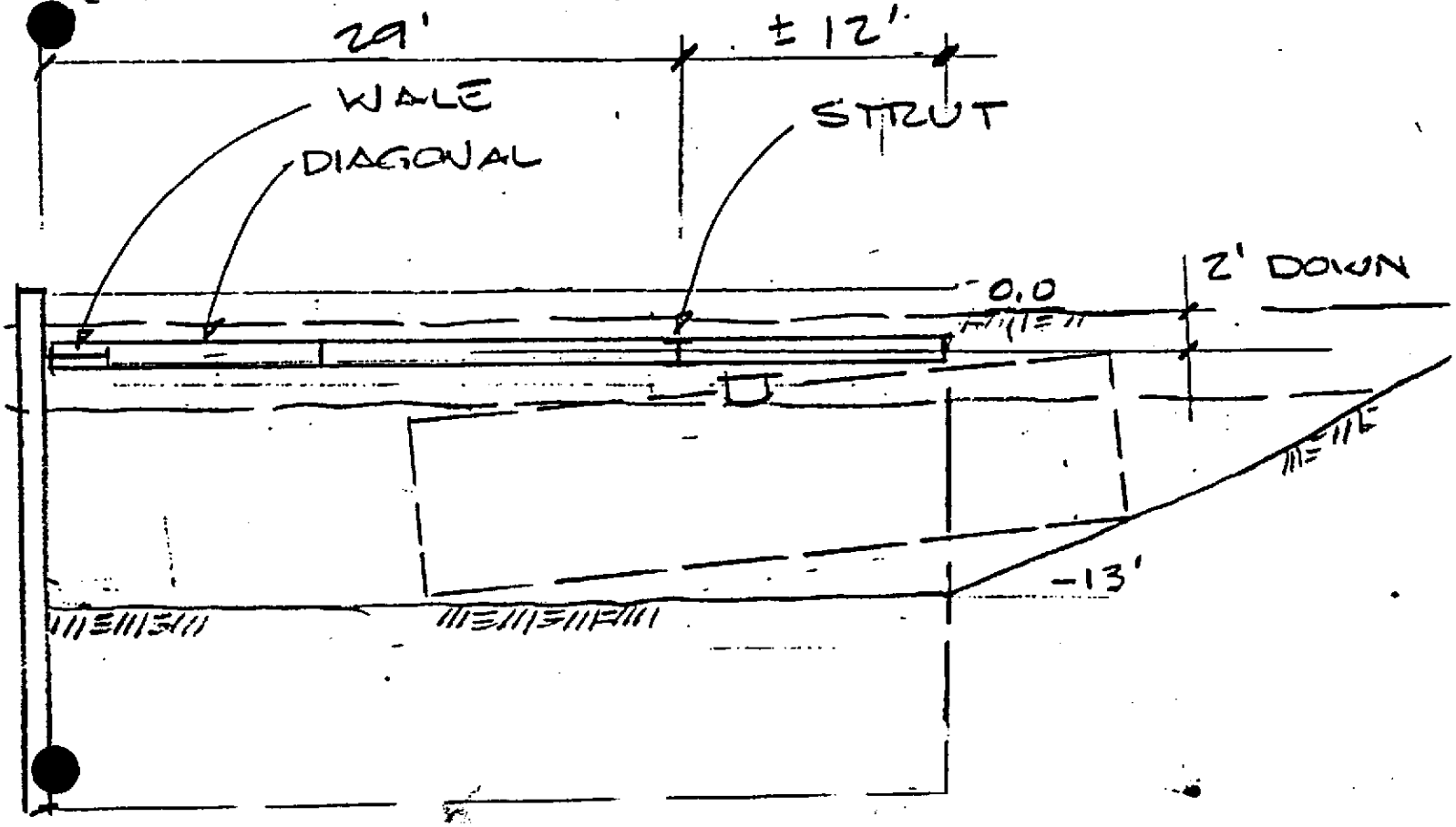
(a) PRE-EXCAVATE 4-5' TO EXPOSE TOPS OF EXISTING TANKS.

(b) SET WALE ON GROUND SURFACE AND BEGIN STABBING SHEET PILES ON 3 SIDES, DRIVE TO SPECIFIED EMBEDMENT,

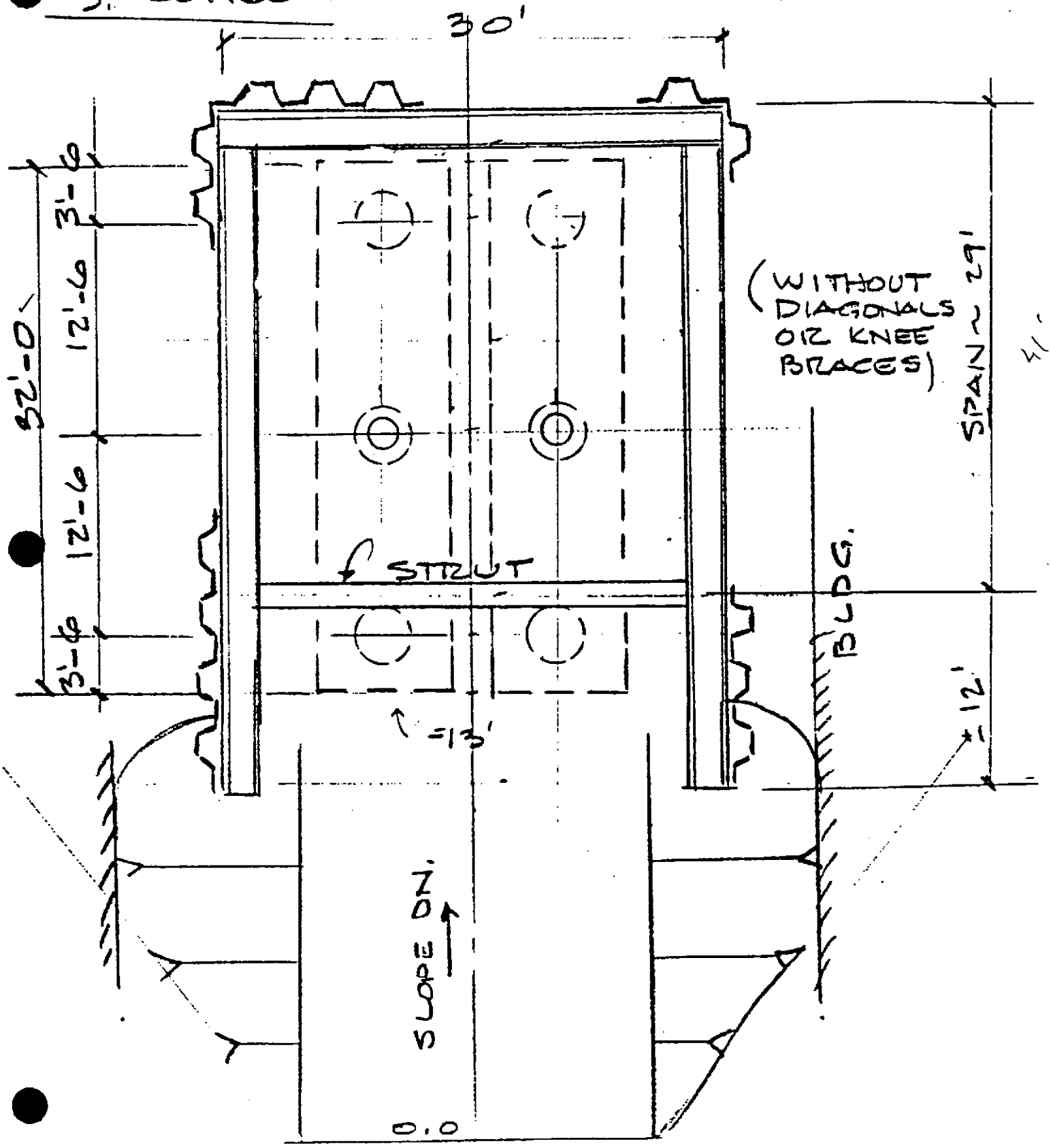
(c) EXCAVATE REMAINING 8' OR 9' TO GRADE. PUMP OUT COLLECTED WATER

(d) MOVE IN NEW TANKS FROM 4TH ST. ENTRANCE, COMPLETE INSTALLATION.

(e) BACKFILL & REMOVE SHORING.

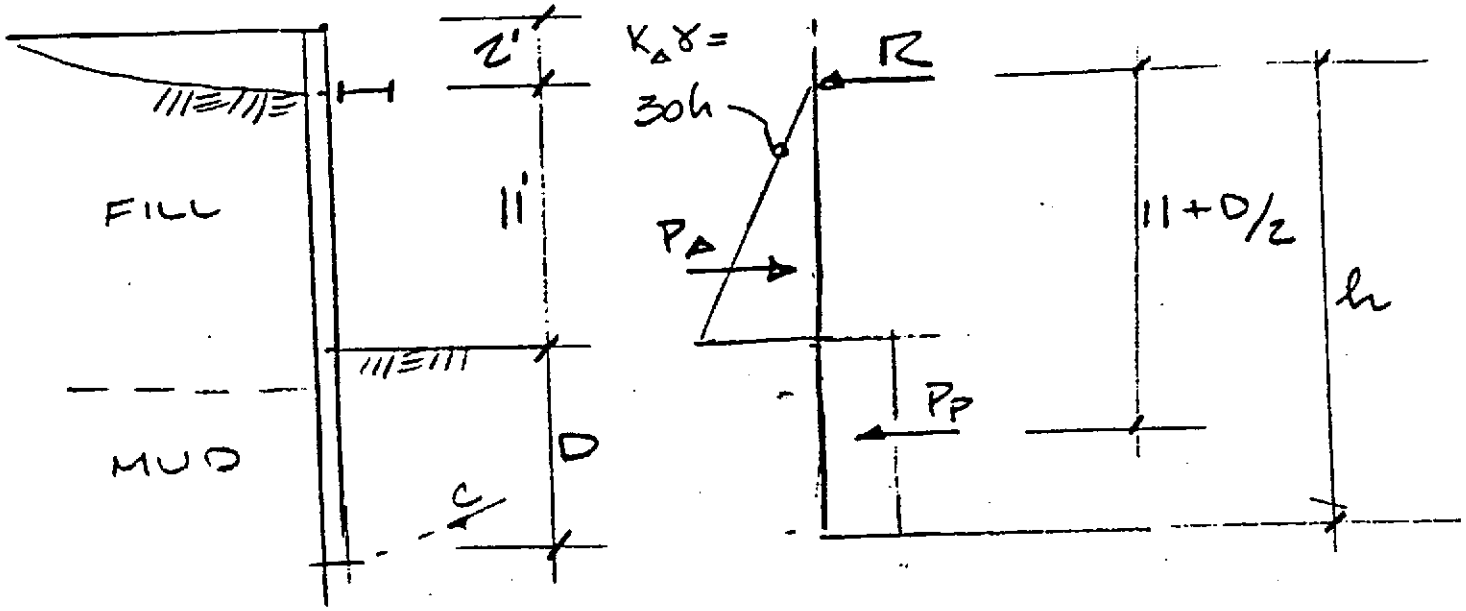


3. CONCEPT



PLAN

4. FORCES ACTING



FOR FILL MATERIALS, USE EQUIVALENT FLUID PRESSURE OF 30 h, $P_A = 0.03(11)^2/2 = 1.82^K/_{FT}$

FOR EMBEDMENT IN BAY MUD, USE $P_p = 2C{:}D$ SO, FOR $C = \frac{250}{1,000}$ PSF,

$P_p = .500\,D$

ΣM @ WALE, USING S.F. = 2.0

$$(2.0)\,1.82(7.33') - \left(11 + \frac{D}{2}\right)(0.5D) = 0$$

$$26.7 - 5.5D - 0.25D^2 = 0$$

$$D^2 + 22D = 107, \qquad D = 4' +$$

THEN $P_p = \frac{0.5(4)}{2.0} = 1.0^K/_{FT}$ & FOR $\Sigma H = 0$,

$R = 1.82 - 1.0 = 0.82^K/_{FT}$,

FOR ACTIVE EARTH PRESSURE DUE TO FILL AT GROUND SURFACE,

$P_A = .030(13)^2/2 = 2.54^k/FT$

$\Sigma M = (2.d(2.54)(8.67') - (11 + \frac{D}{2})0.5D = 0$

$44.0 - 5.5D - 0.25D^2 = 0$

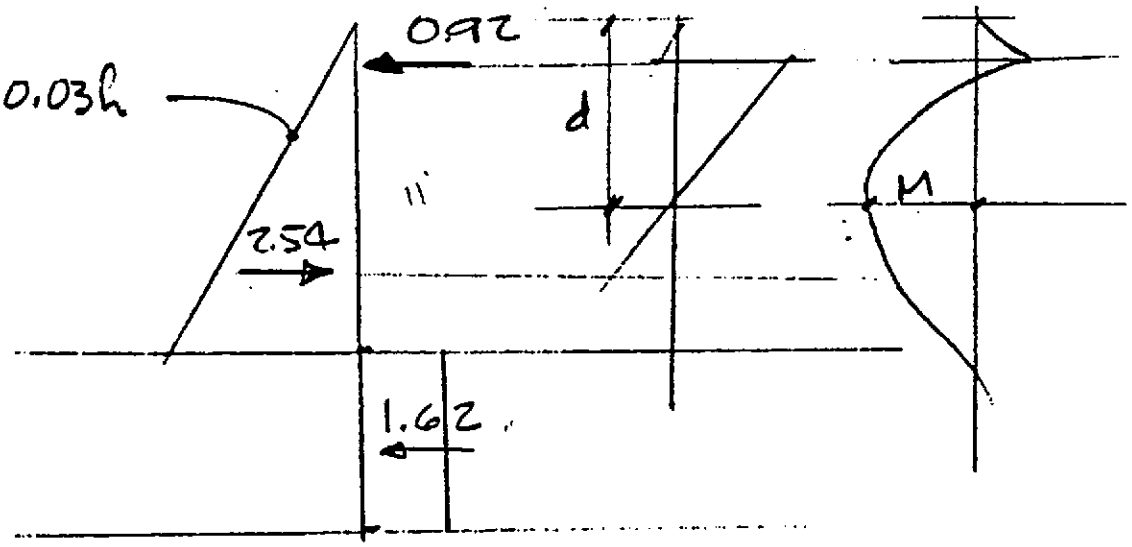
$D^2 + 22D = 176, \quad D = 6.5'$

$P_p = 0.5(6.5)/2.0 = 1.62^k$

$R = 2.54 - 1.62 = 0.92^k/FOOT$ ✓

5, SHEETS

USE $D = 7'$, LENGTH OF SHEETS = $13' + 7 = \underline{20'}$ MIN.



$0.92 = .03d^2/2, \quad d = 7.8'$

$M = 0.92(7.8' - 2.0') - .03(7.8)^3/6, \quad M = 5.336 - 2.37$

$M = 2.96$ FT-KIP/FOOT

REQ'D $S = 2.96(12)/26^{ksi} = 1.4\,IN^3$,

∴ OK TO USE VERY LIGHT SHEET PILES

SUCH AS ARBED PZ-7

($S = 14.0\,IN^3$)

$43.3''/12' = 3.609'$ LAYING LENGTH

MIN. DEPTH TO PRECLUDE HEAVING = $B/\sqrt{2} = 30/1.41 = 21'$!

HA

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6. WALE DESIGN

FOR AXIAL LOAD & BENDING IN SIDE WALES (18' SPAN),

$P = 0.92^K/FT\ (30'/2) = 13.8^K$, $M = 0.92(29)^2/8 = 96.7''$

OR, $M = wa^2/2$, $M = 0.92(12)^2/2 = 66.2^{IK}$ — WORST ↑

USING W 27 x 84 FROM STOCK —

($A_s = 24.8$, $S_{x-x} = 213\ in^3$, $r = 2.07''$)

$f_b = 96.7(12)/213 = 5.45\ ksi$, $F_b = 26\ ksi$

$f_a = 13.8/24.8 = 0.56\ ksi$

$KL/r = 29(12)/2.07 = 168$, $\therefore F_a = 6.9\ ksi$

$$\frac{f_a}{F_a} + \frac{f_b}{F_b} = \frac{0.56}{6.9} + \frac{5.45}{26} = 0.08 + 0.21 = 0.29\ (< 1.0)$$

IF W 27 x 84 NOT AVAILABLE, 7½" FL.

TRY W18 x 50 ($A_s = 14.7\ in^2$, $S_{x-x} = 88.9$, $r = 1.65\ in$)

$f_b = 96.7(12)/88.9 = 13.1\ ksi$, $F_b = 26\ ksi$

$f_a = 13.8/14.7 = 0.94\ ksi$

$KL/r = 28(12)/1.65 = 203$, $F_a = 6\ ksi$

SO $\frac{13.1}{26} + \frac{0.94}{6.0} = 0.50 + 0.16 = 0.66\ (< 1.0)$

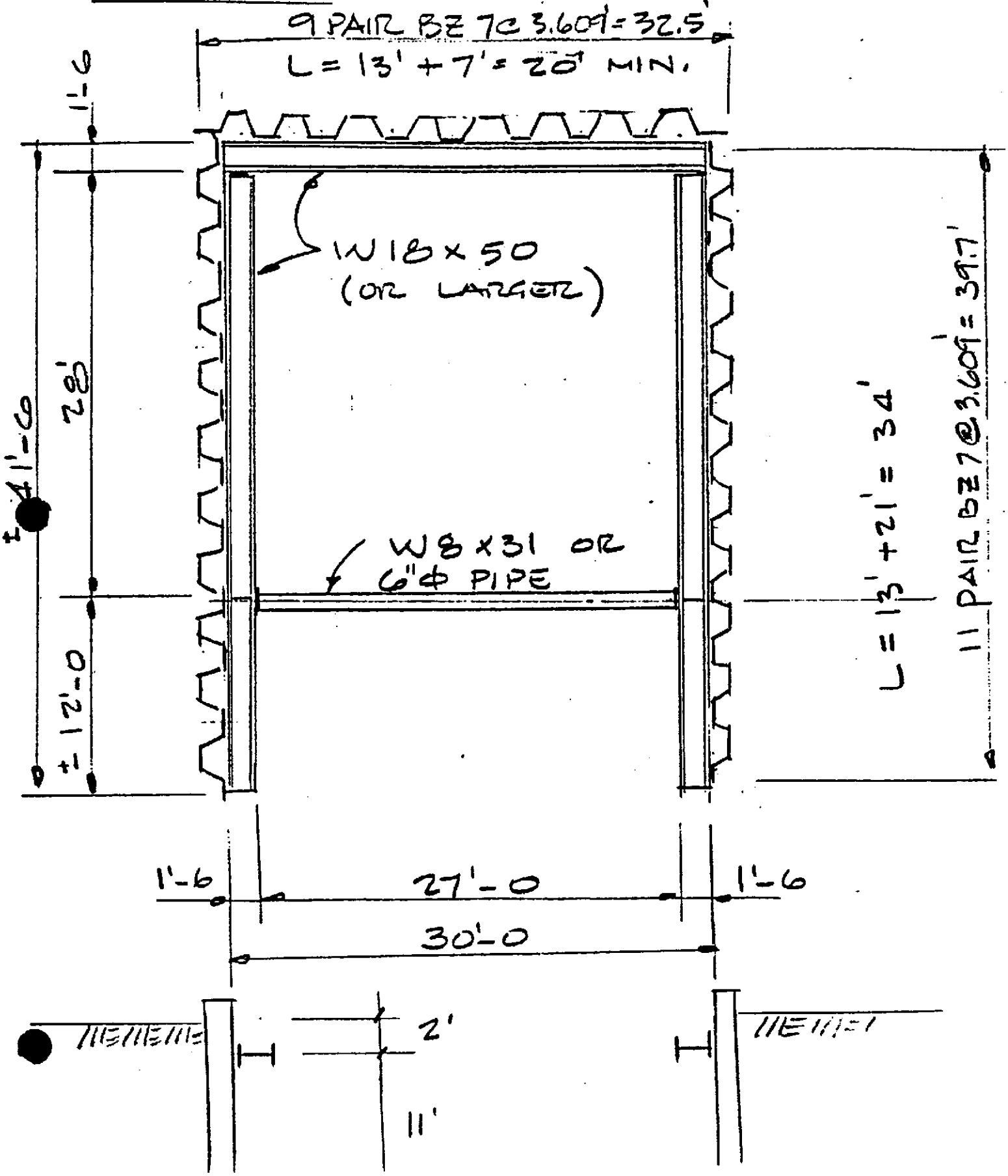
$\therefore$ OK TO USE W18 x 50 FOR WALES.

7. STRUTS

$P = 0.92\left(12' + \frac{29'}{2}\right) = 24.5^K$, $L = 30' - 2(1.5') = 27'$

$\therefore$ USE W8 x 31 OR 6" ϕ SCHED 40 PIPE

B. DESIGN


9 PAIR BZ 7C 3.609 = 32.5'
L = 13' + 7' = 20' MIN.
1'-6
28'
± 41'-0
± 12'-0
W18 x 50
(OR LARGER)
W8 x 31 OR
6"ϕ PIPE
L = 13' + 21' = 34'
11 PAIR BZ 7@3.609' = 39.7'
1'-6
27'-0
1'-6
30'-0
2'
11'

H. V. ANDERSON ENGINEERS

HA

Investigations & Reports / Conceptual Planning / Design Reviews / Construction Engineering

FACSIMILE MESSAGE

TO: JOHN DEES
UNIVERSAL ENGR.

LOCATION: OAKLAND JOB

TELEPHONE

FAX TELEPHONE (707) 746-6815

TOTAL NUMBER OF PAGES 5, NOT INCLUDING THIS COVER SHEET.

PLEASE CALL BACK IF YOU DO NOT RECEIVE ALL THE PAGES.

FROM: H Anderson
H.V. Anderson Engineers

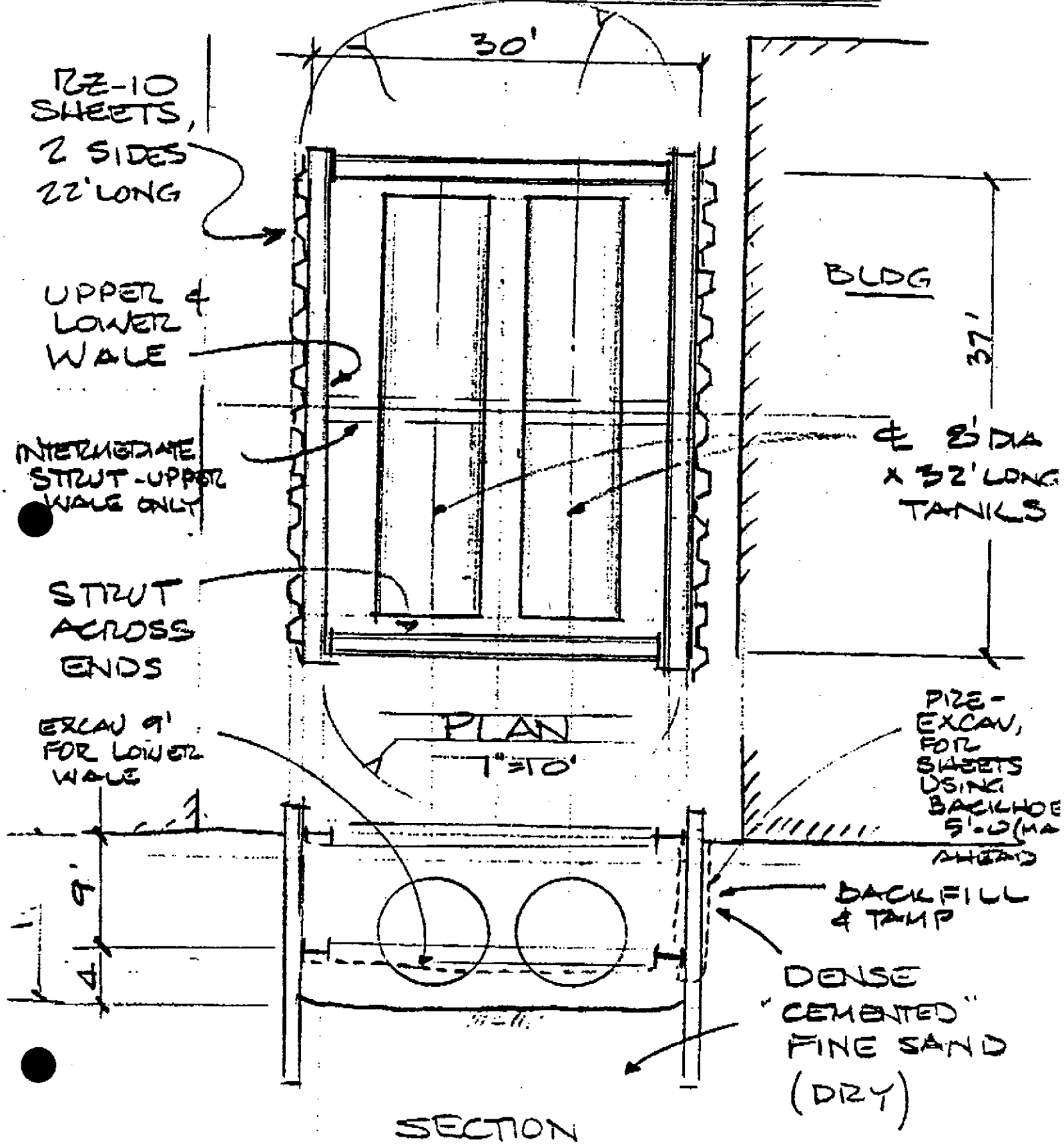
DATE: June 5, 1990

TIME: 1020 AM

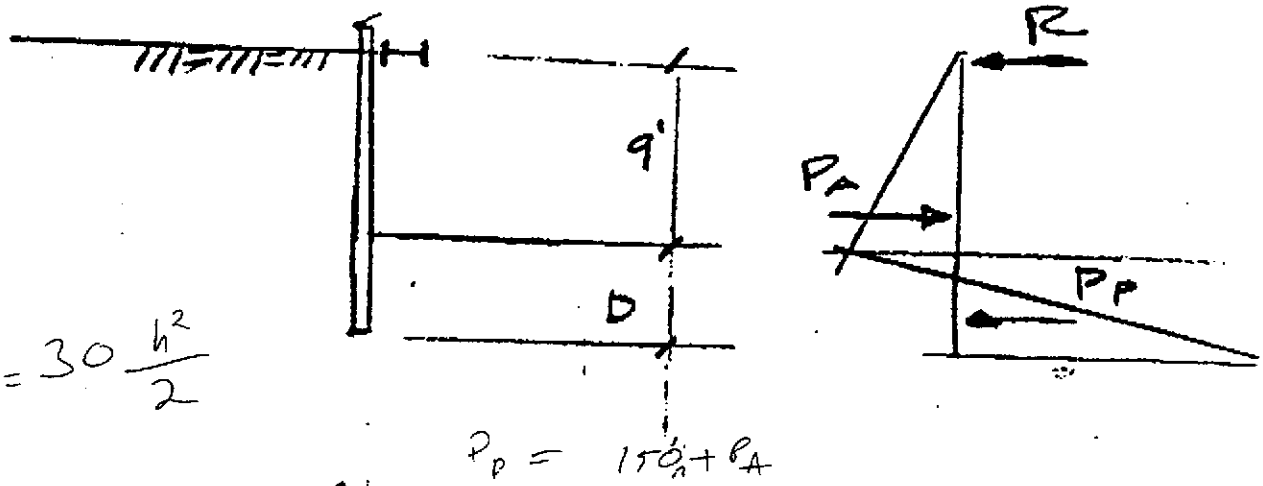
NOTES: SEE SH# 11 FOR UPPER WALE
SH# 13 FOR LOWER WALE

124 Paul Drive / San Rafael, California 94903 / (4 3990

9. ALTERNATE SHORING SCHEME



WORST LOAD ON UPPER WALE: *



USE $P_A = 30h$, $P_p - P_A = 150h$

FOR $h = 9'$

$P_A = 30(9)^2/2 = 1215$ LBS/FOOT $= 1.22^K$/FT

$P_p = 150(D)^2/2 = 75D^2$

$L = 9' + 2/3\,D$

FOR $\Sigma M_{@\ GROUND\ LINE} = 0$, (UPPER WALE IN PLACE)

$1215(2/3 \times 9') - L(P_p)/_{S.F.} = 0$

FOR S.F. 2.0 & SUBSTITUTING $L = 9' + 2/3\,D$

$(9 + 2/3\,D)\left(\frac{75D^2}{2.0}\right) = 1215(2/3 \cdot 9)$

$615D^2 + 50D^3 = 14{,}580$, $D^3 + 13.5D^2 = 292$

$\therefore$, $D = 4'+$

THEN $R = P_A - P_p$, $R = 1215 - \frac{75(4^2)}{2.0}$, $R = 615$ #/FT

* JUST PRIOR TO SETTING LOWER WALE 9' DOWN WHEN SHEETS ARE GIVEN AT LEAST 14' INTO DENSE SOILS.

FOR UPPER WALE, SPAN = 37'

$M = WL^2/8$, $M = 0.615\ (37)^2/8$, $M = 105$ FT-KIP

USING W 27 x 84 ($S = 213 IN^3$)

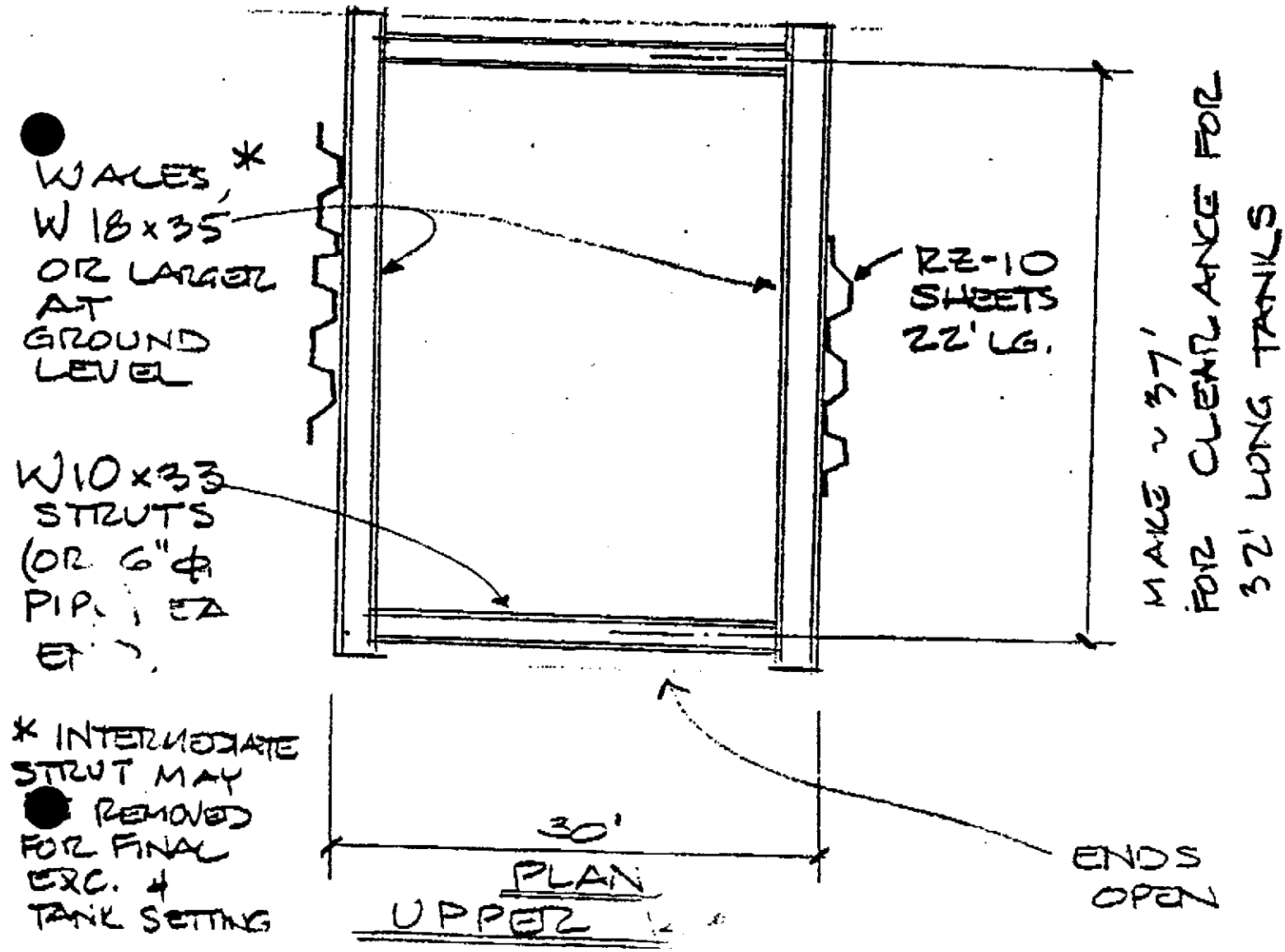
$f_b = M/S$, $f_b = 105(12)/213$, $f_b = 5.9$ ksi (low)

USING W 18 x 35 ($S = 57.6$), $f_b = 21.9$ ksi (OK)

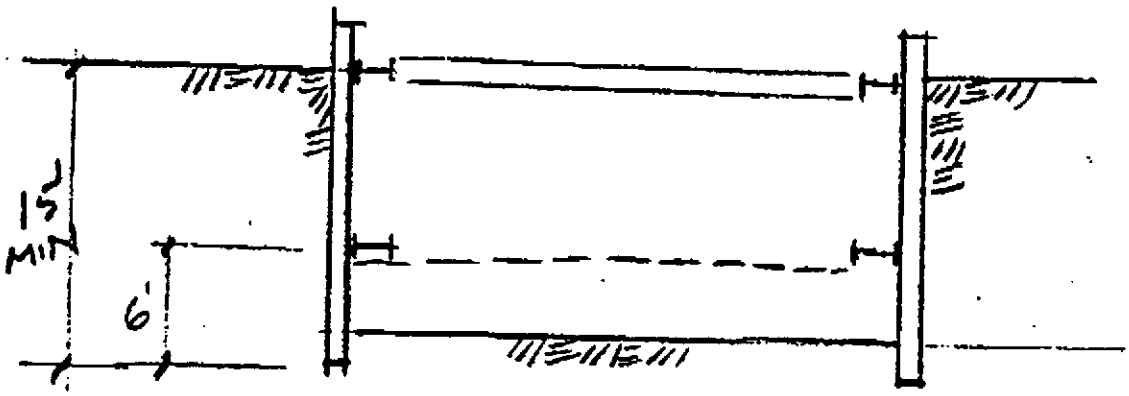
LOAD ON UPPER STRUTS

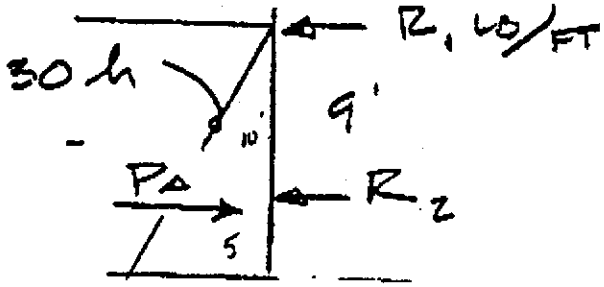
$P = 615\ LB/FT\ (37'/2)$, $P = 11.4$ K (low)

SPAN = 30'; USE 6" ϕ PIPE OR LARGER
OR USE W10 x 33 OR LARGER



LOAD ON LOWER WALE





$P_A = 30h^2/2$

WALE @ GROUND SURFACE, FOR SHEETS DRIVEN 2 FEET BEYOND BOT. OF EXCAV. INTO DENSE SOILS, $h = 15'$

$30(15)^2/2 = 3375$ LB/FT SO FOR Σ M @ LOWER WALE,

$R_1(9) + 3375(1') = 0$, $R_1 = -375$ LB/FT

$R_2 = 3375 + 375 = 3750$ LB/FT , FOR 34' SPAN

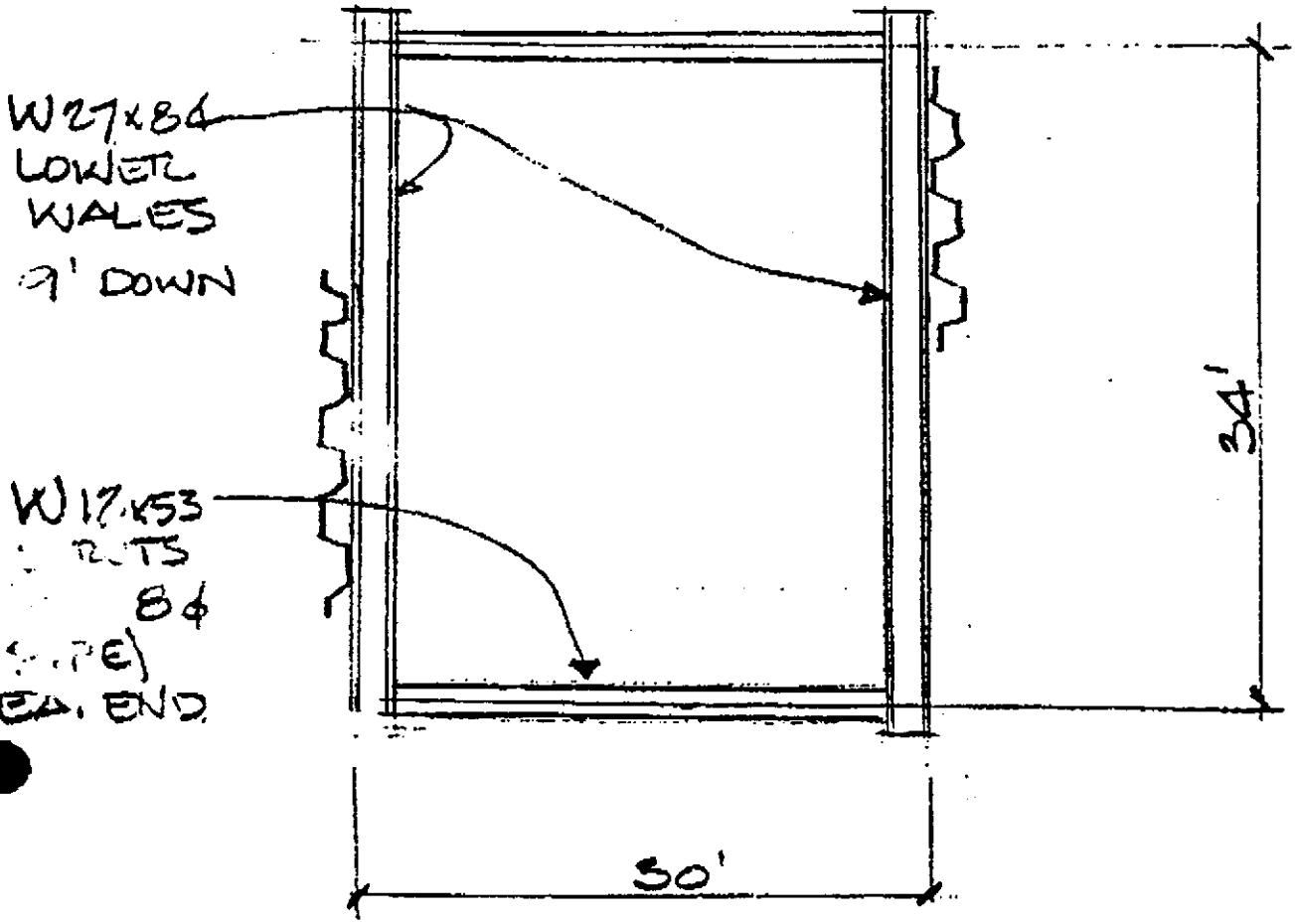
USING W 21 x 84, $M = WL^2/8$,

$M = 3750(34)^2/8 = 542$ FT-KIP.

$f_b = 542(12)/213$, $f_b = 30$ KSI (HIGH BUT OK)

STRUT LOAD = $3.75(34')/2 = 64$ K (27' COL.)

USE W12x53 OR 8" φ STRAIGHT 40 PIPE STRUTS



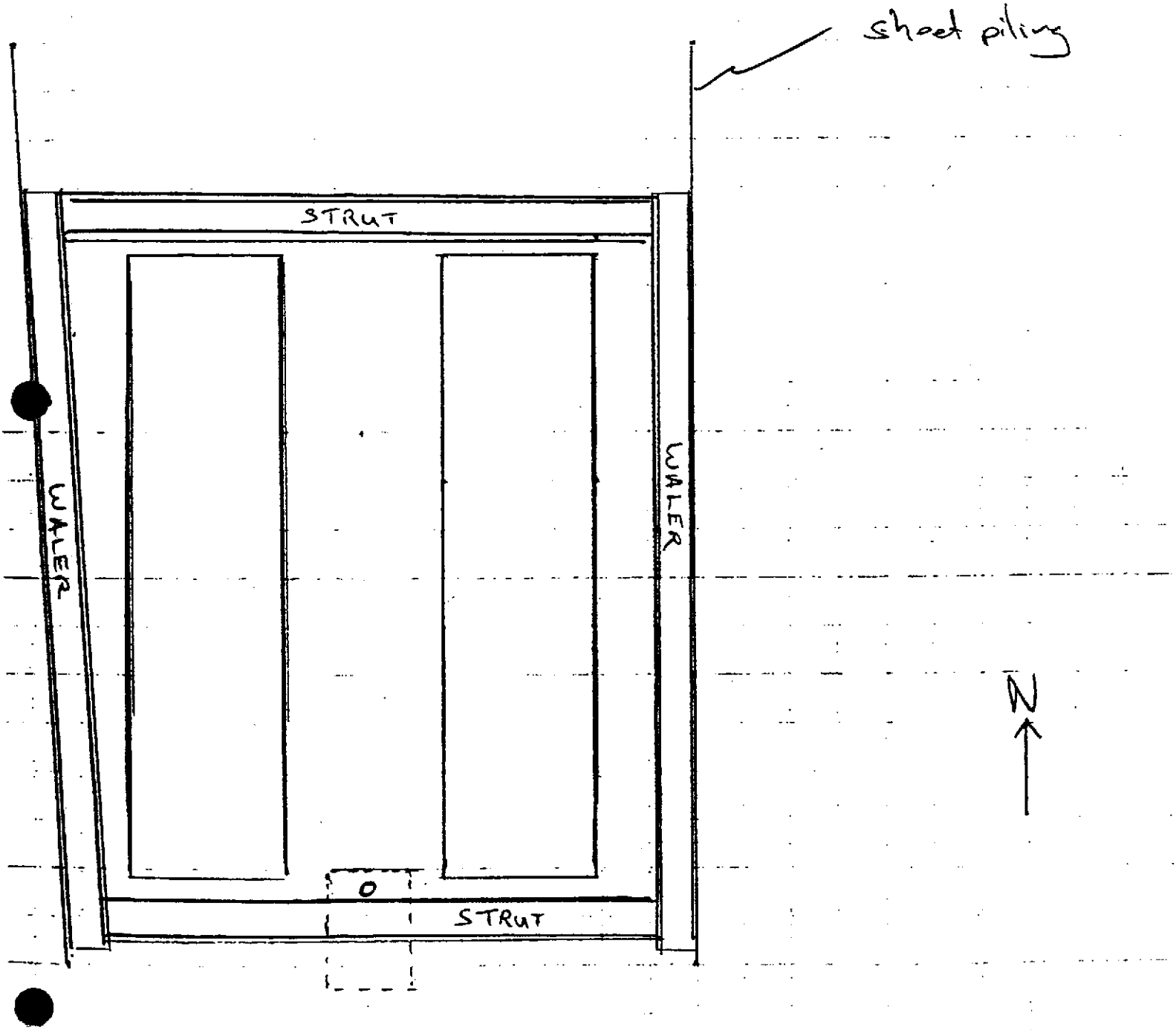
PLAN

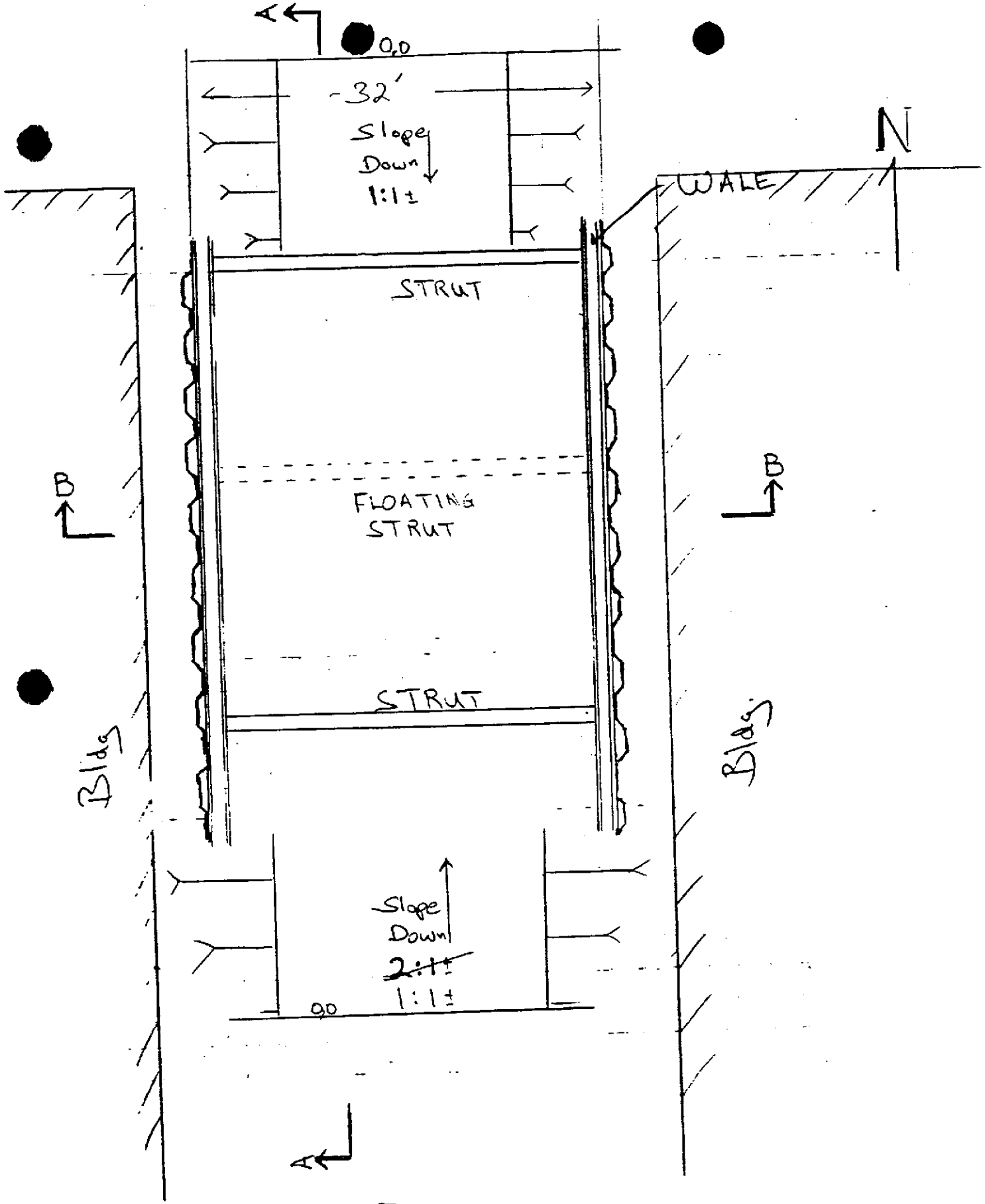
LOWER WALE

1" = 10'

NOTE:
WEDGE BETWEEN SHEETS & WALES.

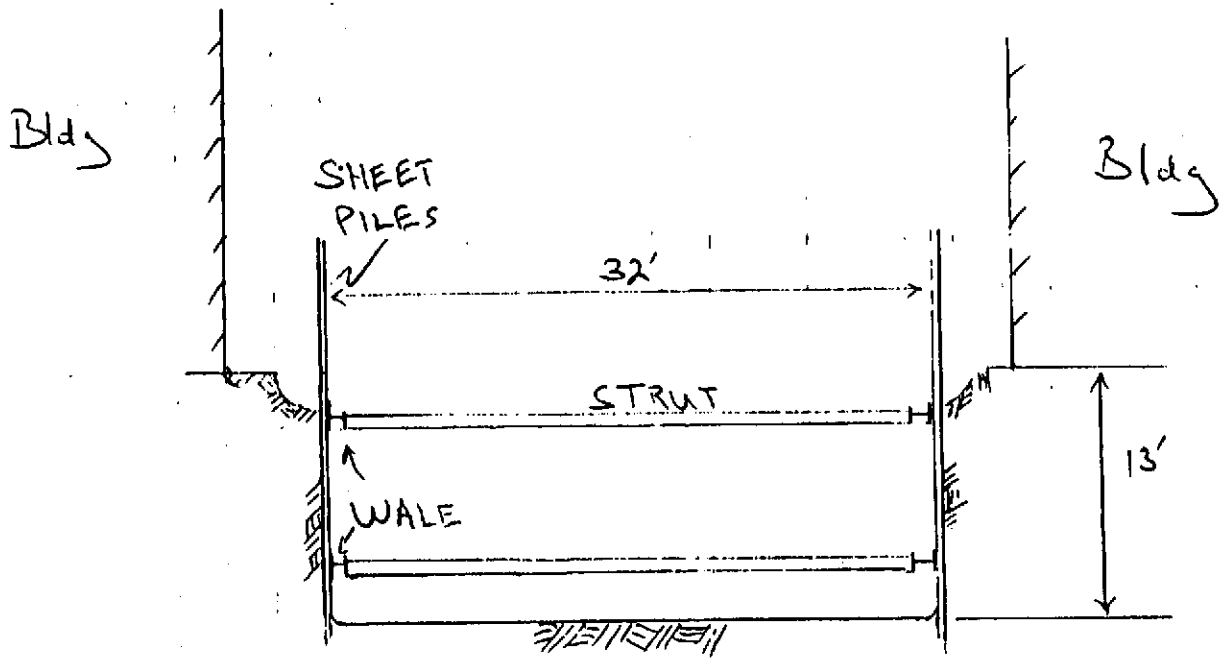
Actual
Bottom Waler/Strut configuration




A
0,0
-32'
Slope
Down
1:1±
N
WALE
STRUT
B
FLOATING
STRUT
B
STRUT
Bldg
Bldg
Slope
Down
~~2:1±~~
1:1±
90
A

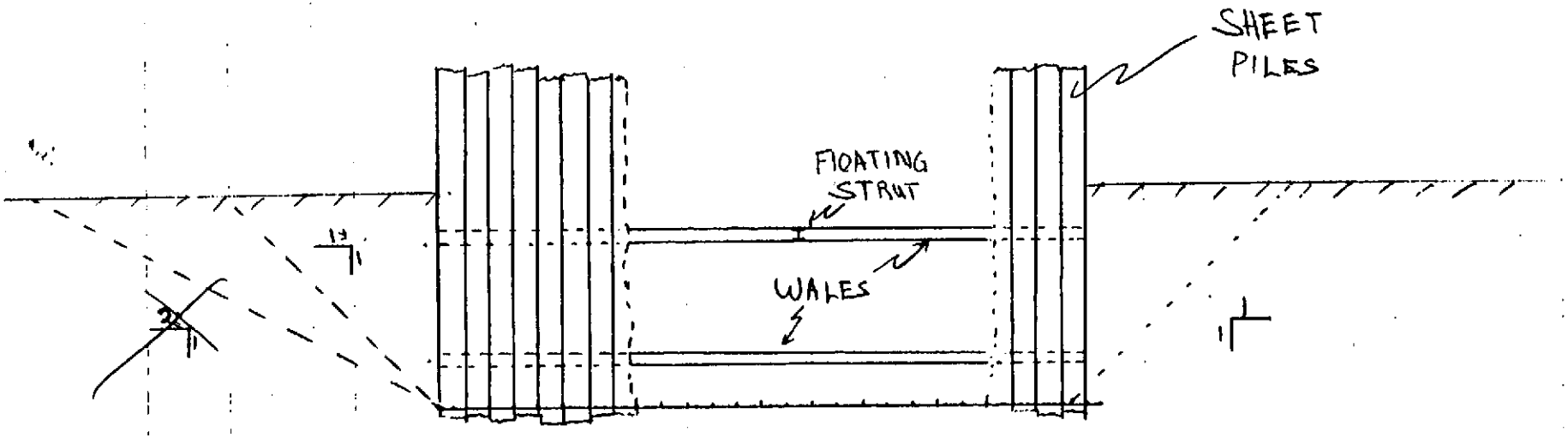
PLAN

1" = 10'



SECTION B-B

1" = 10'



SECTION A-A

1" = 10'

APPENDIX F

REPORT OF DISCHARGE ACTIVITIES TO EBMUD

GROUNDWATER TECHNOLOGY, INC.
4080-D Pike Lane, Concord, CA 94520
(415) 671-2387

FILE COPY

July 10, 1990

Job No. 203 680 5016.02

Ms. Karen Folks
East Bay Municipal Utilities District
2130 Adeline Street
Oakland, CA 94607

Re: Chronology of Discharge Activities
at 404 Market Street in Oakland, California
under EBMUD Account No. 014-23491

Dear Ms. Folks:

On Tuesday, June 12, 1990, Groundwater Technology, Inc. intiated dewatering activities of the excavation at the above-referenced site. The dewatering/wastewater discharge system included two twenty-two thousand gallon aboveground-storage tanks and a filtration system. A total of four, activated carbon drums connected in two parallel series made up the filtration system. This configuration allowed a maximum discharge rate of 10 gallons per minute.

The system was set up to have the groundwater pumped from the excavation to one of the aboveground-storage tanks which was designated Baker I. The carbon filtration system was connected to the Baker I tank. The groundwater passed from Baker I through the filtration system into the second aboveground storage tank, Baker II.

The dewatering/wastewater discharge system operated from June 12, to June 28, 1990. A total of 34,980-gallons of groundwater was processed. The following details the specific events of dewatering and subsequent discharge.

6/12 Initiated dewatering of pit pumping into Baker I tank.

Filtered approximately 1,000 gallons from Baker I to Baker II tank, then shut system down.

Sampled filtered groundwater in Baker II, see enclosed laboratory results.

6/13 Continued dewatering of excavation, pumping into Baker I tank.

6/14 Submitted initial laboratory results of filtered groundwater to East Bay Municipal Utilities District (EBMUD).

Continued to dewater excavation to Baker I tank.

Re-established filtration of groundwater from Baker I to Baker II tank.

Filtered a total of 7,730 gallons to date, and initiated discharge of filtered groundwater to new underground storage tank (UST) from Baker II tank.

6/15 EBMUD sampled water in Baker II tank.

Continued to dewater excavation, pumping into Baker I tank.

Continued to filter groundwater from Baker I to Baker II tank.

Filtered a total of 11,710 gallons of groundwater to date.

Continued to discharge filtered groundwater from Baker II tank to newly installed USTs.

6/16-17 Continued to dewater excavation, pumping into Baker I tank.

Continued to filter groundwater from Baker I to Baker II tank.

Filtered a total of 20, 920 gallons of groundwater to date.

6/18 Continued to dewater, pumping into Baker I tank.

Continued to filter groundwater from Baker I to Baker II tank.

Filtered a total of 26,640 gallons of groundwater to Baker II tank to date.

Initiated direct discharge of filtered groundwater from Baker II tank to sewer.

6/19 Continued to dewater excavation to Baker I tank.

Sampled filtered groundwater being discharged to sewer, see enclosed laboratory results.

6/20 Stopped dewatering of excavation.

Continued to pump filtered groundwater from Baker II tank to new USTs.

Completed filtration of groundwater in Baker I tank and direct discharge to sewer, total filtered and discharged 8,340 gallons.

6/21 Completed discharge of filtered groundwater to new UST.

6/22 Initiated discharge of filtered groundwater from Baker II tank to sewer.

6/23-24 No discharge or transfers of groundwater.

6/25 Continued discharge of filtered groundwater from Baker II tank to sewer.

6/26 No discharge or transfer of groundwater.

6/27 Sampled last 10,000 gallons of filtered groundwater in Baker II tank.

J. Smith of EBMUD takes sample of filtered groundwater in Baker II tank.

Completed discharge of all filter groundwater in Baker II tank.

7/5 Discharged all waters from new UST to sewer. The discharge waters were a combination of filtered groundwater from Baker II tank and potable waters.

Groundwater Technology hopes that the information presented meets your needs. If you have any questions or require additional information, please contact our Concord office at (415) 671-2387.

Sincerely,
GROUNDWATER TECHNOLOGY, INC.

Paul D. Horton
Project Manager

PDH:lf
L5016J6

cc: Ms. Anne Lunt/Safety-Kleen Corporation

GTEL
ENVIRONMENTAL
LABORATORIES, INC.
Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Project Number: 203-680-5016.04
Work Order Number: D0-05-670
Location: Not Given
Date Sampled: 24-May-90

May 31, 1990

Rick Thomasser
Groundwater Techology, Inc.
4080-D Pike Lane
Concord, CA 94520

Enclosed please find the analytical results report prepared by GTEL for samples received on 05/24/90, under chain of custody number 72-7127.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project was performed in strict adherence to our QA/QC program to ensure sample integrity and to meet quality control criteria.

If you have any question concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Emma P. Popek

Emma P. Popek
Laboratory Director

Project Number: 203-680-5016.04
Work Order Number: D0-05-670
Location: Not Given
Date Sampled: 24-May-90

Table 1a

ANALYTICAL RESULTS

Priority Pollutant Metals in Water

Method: EPA 6010/7000 Series[a]

GTEL Sample Number		01			
Client Identification		MW-8-1			
Date Prepared		05/29/90			
Date Analyzed		05/29/90			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Antimony	500	<500			
Arsenic	5	6			
Beryllium	20	<20			
Cadmium	50	<50			
Chromium, total	100	<100			
Copper	100	<100			
Lead	200	<200			
Mercury	0.2	<0.2			
Nickel	100	<100			
Selenium	10	<10			
Silver	100	<100			
Thallium	300	<300			
Zinc	100	<100			
Detection limit multiplier		1			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample preparation by EPA 3005. Sample analysis by EPA 6010 except for: arsenic by EPA 7060, lead by EPA 7421, mercury by EPA 7471, and selenium by EPA 7740.

GTEL
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LABORATORIES, INC.

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4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

05/31/90 rw

WORK ORD#: D005671
CLIENT: Rick Thomasser
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: 203-680-5016.04
LOCATION: Not Given

SAMPLED: 05/24/90 BY: R. Thomasser
RECEIVED: 05/24/90
ANALYZED: 05/25/90 BY: M. Ly

MATRIX: Water
UNITS: ug/L (ppb)

PARAMETER	MDL	SAMPLE # I.D.	01 MW8-2			
Chloromethane	0.12		<0.12			
Vinyl chloride	0.07		<0.07			
Bromomethane	0.07		<0.07			
Chloroethane	0.05		<0.05			
Trichlorofluoromethane	0.05		<0.05			
1,1-Dichloroethylene	0.07		0.2			
Methylene chloride	0.24		<0.24			
trans-1,2-Dichloroethylene	0.06		<0.06			
1,1-Dichloroethane	0.09		0.44			
2,2-Dichloropropane	0.09		<0.09			
cis-1,2-Dichloroethene	0.16		0.93			
Bromochloromethane	0.15		<0.15			
Chloroform	0.10		<0.10			
1,1,1-Trichloroethane	0.05		0.11			
Carbon tetrachloride	0.06		<0.06			
1,1-Dichloropropene	0.05		<0.05			
Benzene	0.39		<0.39			
1,2-Dichloroethane	0.19		4.1			
Trichloroethylene	0.13		22			
1,2-Dichloropropane	0.12		<0.12			
Dibromomethane	0.17		<0.17			
Bromodichloromethane	0.12		<0.12			
cis-1,3-Dichloropropene	0.11		<0.11			
Toluene	0.83		<0.83			
trans-1,3-Dichloropropane	0.09		<0.09			
1,1,2-Trichloroethane	0.19		<0.19			
Tetrachloroethene	0.08		0.38			
1,3-Dichloropropane	0.21		<0.21			

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 524.2

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#:D005671

CLIENT: Rick Thomasser
PROJECT#: 203-680-5015.04
LOCATION: Not Given

MATRIX: Water
UNITS: ug/L (ppb)

PARAMETER	MDL	SAMPLE # I.D. 01 MW8-2			
Dibromochloromethane	0.13	<0.13			
1,2-Dibromomethane	0.19	<0.19			
Chlorobenzene	0.08	1.2			
1,1,1,2-Tetrachloroethane	0.11	<0.11			
Ethylbenzene	0.27	<0.27			
p- & m-Xylene	0.32	<0.32			
o-xylene	0.37	<0.37			
Styrene	0.08	<0.08			
Bromoform	0.15	<0.15			
Isopropylbenzene	0.08	<0.08			
Bromobenzene	0.15	<0.15			
1,1,2,2-Tetrachloroethane	0.20	<0.20			
1,2,3-Trichloropropane	0.33	<0.33			
n-Propylbenzene	0.13	<0.13			
2-Chlorotoluene	0.09	<0.09			
4-Chlorotoluene	0.11	<0.11			
1,3,5-Trimethylbenzene	0.20	<0.20			
tert-Butylbenzene	0.09	<0.09			
1,2,4-Trimethylbenzene	0.20	<0.20			
sec-Butylbenzene	0.10	<0.10			
1,3-Dichlorobenzene	0.08	<0.08			
1,4-Dichlorobenzene	0.14	<0.14			
p-Isopropyltoluene	0.09	<0.09			
1,2-Dichlorobenzene	0.17	<0.17			
n-Butylbenzene	0.09	<0.09			
1,2-Dibromo-3-chloropropane	0.23	<0.23			
1,2,4-Trichlorobenzene	0.14	<0.14			
Naphthalene	0.34	<0.34			
Hexachlorobutadiene	0.47	<0.47			
1,2,3-Trichlorobenzene	0.16	<0.16			

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 524.2

Emma P. Popek
EMMA P. POPEK, Laboratory Director

GTEL ENVIRONMENTAL LABORATORIES, INC.

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72- 7127

CUSTODY RECORD

Project Manager: Rick Thomasser
Phone #: 685-9250
FAX #:

Address: 4080 Pike Lane, Suite D. Concord
Site location:

Project Number: 203 6805016.04
Project Name: Safety-Kleen Oak

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print): Rick Thomasser

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO_3	H_2SO_4	ICE	NONE	OTHER	Sampling: DATE	TIME
MW-8-1	MW-8	01	1	X						X					5/24/10	10a
MW-8-2	MW-8		2	X					X						5/24/10	10a

ANALYSIS REQUEST

PROJ. NF 1/3

BTEX 602 ☐ 8020 ☐ with MTBE ☐	BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐	TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel	Product I.D. by GC (SIMDIS) ☐	Total Oil & Grease 413.1 ☐ 413.2 ☐ 503A ☐	Total Petroleum Hydrocarbons 418.1 ☐ 503E ☐	EPA 601 ☐ 8010 ☐ DCA only ☐	EPA 602 ☐ 8020 ☐	EPA 608 ☐ 8080 ☐ PCBs only ☐	EPA 610 ☐ 8310 ☐	EPA 624 ☐ 8240 ☐ NBS +15 ☐	EPA 625 ☐ 8270 ☐ NBS +25 ☐	EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐	TCLP Metals ☐ VOA ☐ Semi VOA ☐	EPA Priority Pollutant Metals X HSL ☐	LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐	CAM Metals ☐ STLC ☐ TTLC	Corrosivity ☐ Flashpoint ☐ Reactivity ☐	EPA 524.2
														X				X

Received by: — Time 1:10pm — Date 5/24/10

Received by: — Time — Date

Received by Laboratory: — Time 1:10 — Date 5/24/10

Relinquished by Sampler: — Time — Date

Relinquished by: — Time — Date

Relinquished by: — Time — Date

SPECIAL HANDLING

24 HOURS ☐
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
X OTHER 5 (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Lab Use Only — Storage Location
Lot #: — Work Order #:

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#:D006280

CLIENT: Gary Long
PROJECT#: SFB-680-0345.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA
MATRIX: Water
UNITS: ug/L (ppb)

PARAMETER	MDL	SAMPLE # I.D.	01 TANK #1			
Dibromochloromethane	0.13		<0.13			
1,2-Dibromomethane	0.19		<0.19			
Chlorobenzene	0.08		<0.08			
1,1,1,2-Tetrachloroethane	0.11		<0.11			
Ethylbenzene	0.27		<0.27			
p- & m-Xylene	0.32		<0.32			
o-xylene	0.37		<0.37			
Styrene	0.08		<0.08			
Bromoform	0.15		<0.15			
Isopropylbenzene	0.08		0.55			
Bromobenzene	0.16		<0.16			
1,1,2,2-Tetrachloroethane	0.20		<0.20			
1,2,3-Trichloropropane	0.33		<0.33			
n-Propylbenzene	0.13		<0.13			
2-Chlorotoluene	0.09		<0.09			
4-Chlorotoluene	0.11		<0.11			
1,3,5-Trimethylbenzene	0.20		2.00			
tert-Butylbenzene	0.09		<0.09			
1,2,4-Trimethylbenzene	0.20		<0.20			
sec-Butylbenzene	0.10		0.55			
1,3-Dichlorobenzene	0.08		<0.08			
1,4-Dichlorobenzene	0.14		0.15			
p-Isopropyltoluene	0.09		<0.09			
1,2-Dichlorobenzene	0.17		<0.17			
n-Butylbenzene	0.09		<0.09			
1,2-Dibromo-3-chloropropane	0.23		<0.23			
1,2,4-Trichlorobenzene	0.14		<0.14			
Naphthalene	0.24		<0.24			
Hexachlorobutadiene	0.47		<0.47			
1,2,3-Trichlorobenzene	0.16		<0.16			

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 524.2

Emma P. Popek /RMB
EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

06/18/90 sp

WORK ORD#: D006280
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0345.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA
SAMPLED: 06/12/90 BY: P. Horton
RECEIVED: 06/13/90
ANALYZED: 06/14/90 BY: M. Ly

MATRIX: Water
UNITS: ug/L (ppb)

PARAMETER	MDL	SAMPLE # I.D.	01 TANK #1
Chloromethane	0.12		<0.12
Vinyl chloride	0.07		<0.07
Bromomethane	0.07		<0.07
Chloroethane	0.05		<0.05
Trichlorofluoromethane	0.06		<0.06
1,1-Dichloroethylene	0.07		<0.07
Methylene chloride	0.24		<0.24
trans-1,2-Dichloroethylene	0.06		<0.06
1,1-Dichloroethane	0.09		<0.09
2,2-Dichloropropane	0.09		<0.09
cis-1,2-Dichloroethene	0.16		<0.16
Bromochloromethane	0.15		<0.15
Chloroform	0.10		<0.10
1,1,1-Trichloroethane	0.05		<0.05
Carbon tetrachloride	0.06		<0.06
1,1-Dichloropropene	0.06		<0.06
Benzene	0.39		<0.39
1,2-Dichloroethane	0.19		<0.19
Trichloroethylene	0.13		<0.13
1,2-Dichloropropane	0.12		<0.12
Dibromomethane	0.17		<0.17
Bromodichloromethane	0.12		<0.12
cis-1,3-Dichloropropene	0.11		<0.11
Toluene	0.83		<0.83
trans-1,3-Dichloropropane	0.09		<0.09
1,1,2-Trichloroethane	0.19		<0.19
Tetrachloroethane	0.08		0.10
1,3-Dichloropropane	0.21		<0.21

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 524.2

GTEL ENVIRONMENTAL LABORATORIES, INC

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72-7148

Project Manager: Paul Horton
Phone #:
FAX #:
Address: 4080-D Pike Ln. Concord
Site location: 400 Market - Oakland
Project Number: SF680-0354.72 / 203 680 5016 02
Project Name: S-Kleer Oakland
I attest that the proper field sampling procedures were used during the collection of these samples.
Sampler Name (Print): P. Horton

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO_3	H_2SO_4	ICE	NONE	OTHER	Sampling: DATE	TIME
Tank 1	Baker Tank	01	2X									X			6-12-90	

ANALYSIS REQUEST

BTEX 602 ☐ 8020 ☐ with MTBE ☐
BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐
TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel
Product I.D. by GC (SIMDIS) ☐
Total Oil & Grease: 413.1 ☐ 413.2 ☐ 503A ☐
Total Petroleum Hydrocarbons: 418.1 ☐ 503E ☐
EPA 601 ☐ 8010 ☐ DCA only ☐
EPA 602 ☐ 8020 ☐
EPA 608 ☐ 8080 ☐ PCBs only ☐
EPA 610 ☐ 8310 ☐
EPA 624 ☐ 8240 ☐ NBS +15 ☐
EPA 625 ☐ 8270 ☐ NBS +25 ☐
EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐
TCLP Metals ☐ VOA ☐ Semi VOA ☐
EPA Priority Pollutant Metals ☐ HSL ☐
LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐
CAM Metals ☐ STLC ☐ TTLC
Corrosivity ☐ Flashpoint ☐ Reactivity ☐
X EPA 524.2
X pH

R. M 6/19/90

SPECIAL HANDLING

24 HOURS ☐
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____ (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS: Need Verbals of results ! LBOT

Lab Use Only Storage Location
Lot #: Work Order #: D006280

CUSTODY RECORD

Relinquished by Sampler:	Received by:	Received by:	Received by Laboratory:
Date	Time	Date	Time	Date	Time
			6/13/90 12:30

Relinquished by: Relinquished by: Relinquished by:

Way bill #

GTEL ENVIRONMENTAL LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

06/15/90 mh

WORK ORD#: D006201
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
LOCATION: 404 Market Street
Oakland, CA
SAMPLED: 06/14/90 BY: J. Bethell
RECEIVED: 06/15/90
ANALYZED: 09/15/90 BY: M. Munchhof

MATRIX: Water

PARAMETER	UNITS	METHOD	SAMPLE # I.D.	01 Tank #1		
pH	pH Units	EPA 423		7.0		

Emma P. Popek/Pam Sng
EMMA P. POPEK, Laboratory Director

D0016359 INV.

GTEL ENVIRONMENTAL LABORATORIES, INC

4080 Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72-6546

Project Manager: Paul Horton
Phone #:
FAX #:
Address:
Site location: 404 Market St. / Oakland
Project Number: SF8-680-0354.72
Project Name: Shell/Oakland
I attest that the proper field sampling procedures were used during the collection of these samples.
Sampler Name (Print): J. Bethel

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO_3	H_2SO_4	ICE	NONE	OTHER	Sampling: DATE	TIME
Tank 1		01	1	X								X			6/14	4:00

ANALYSIS REQUEST

BTEX 602 ☐ 8020 ☐ with MTBE ☐
BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐
TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel
Product I.D. by GC (SIMDIS) ☐
Total Oil & Grease 413.1 ☐ 413.2 ☐ 503A ☐
Total Petroleum Hydrocarbons 418.1 ☐ 503E ☐
EPA 601 ☐ 8010 ☐ DCA only ☐
EPA 602 ☐ 8020 ☐
EPA 608 ☐ 8080 ☐ PCBs only ☐
EPA 610 ☐ 8310 ☐
EPA 624 ☐ 8240 ☐ NBS +15 ☐
EPA 625 ☐ 8270 ☐ NBS +25 ☐
EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐
TCLP Metals ☐ VOA ☐ Semi VOA ☐
EPA Priority Pollutant Metals ☐ HSL ☐
LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐
CAM Metals ☐ STLC ☐ TTLC
Corrosivity ☐ Flashpoint ☐ Reactivity ☐
X pH

SPECIAL HANDLING
24 HOURS ☐
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____ (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)
1 hour TAT

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Lab Use Only
Lot #:
Storage Location
Work Order #:

CUSTODY RECORD

	Relinquished by Sampler	Relinquished by:	Relinquished by:
	J. Bethel		Paul D. Horton
Date	7-2-97		6/15
Time	8:15-20		0940
Received by:	Paul D. Horton	Received by:	Received by Laboratory: Waybill #

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Western Region
4080-C Pike Ln., Concord, CA 94520
(415) 685-7852
In CA: (800) 544-3422
Outside CA: (800) 423-7143

Project Number: [redacted]-680-0354.72
Consultant Project Number: SFB-680-0354.72
Project ID: 404 Market St. Oakland
Work Order Number: D0-06-437

June 20, 1990

Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123

Enclosed please find the analytical results report prepared by GTEL for samples received on 06/19/90, under chain of custody number 72-6536.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project was performed in strict adherence to our QA/QC program to ensure sample integrity and to meet quality control criteria.

If you have any question concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Emma P. Popek

Emma P. Popek
Laboratory Director

Table 1

ANALYTICAL RESULTS

Purgeable Halocarbons in Water

EPA Method 601[a]

GTEL Sample Number		01			
Client Identification		5000 B1			
Date Sampled		06/19/90			
Date Analyzed		06/19/90			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	< 0.5			
Bromomethane	0.5	< 0.5			
Vinyl chloride	1	< 1			
Chloroethane	0.5	< 0.5			
Methylene chloride	0.5	< 0.5			
1,1-Dichloroethene	0.2	< 0.2			
1,1-Dichloroethane	0.5	< 0.5			
trans-1,2-Dichloroethene	0.5	< 0.5			
Chloroform	0.5	< 0.5			
1,2-Dichloroethane	0.5	< 0.5			
1,1,1-Trichloroethane	0.5	< 0.5			
Carbon tetrachloride	0.5	< 0.5			
Bromodichloromethane	0.5	< 0.5			
1,2-Dichloropropane	0.5	< 0.5			
cis-1,3-Dichloropropene	0.5	< 0.5			
Trichloroethene	0.5	< 0.5			
Dichlorodifluoromethane	0.5	< 0.5			
Dibromochloromethane	0.5	< 0.5			
1,1,2-Trichloroethane	0.5	< 0.5			
trans-1,3-Dichloropropene	0.5	< 0.5			
2-Chloroethylvinyl ether	1	< 1			
Bromoform	0.5	< 0.5			
Tetrachloroethene	0.5	< 0.5			
1,1,2,2-Tetrachloroethane	0.5	< 0.5			
Chlorobenzene	0.5	< 0.5			
1,2-Dichlorobenzene	0.5	< 0.5			
1,3-Dichlbrobenzene	0.5	< 0.5			
1,4-Dichlorobenzene	0.5	< 0.5			
Trichlorofluoromethane	0.5	< 0.5			
Detection Limit Multiplier		1			

a. Federal Register, Vol. 49, October 26, 1984.

GTEL ENVIRONMENTAL LABORATORIES, INC.

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#: D006438
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
LOCATION: 404 Market St. Oakland, CA

SAMPLED: 06/19/90 BY: J. Bethell
RECEIVED: 06/19/90
ANALYZED: 06/19/90 BY: P. Sweet
MATRIX: Water

TEST RESULTS

PARAMETER	UNITS	MDL	METHOD	SAMPLE # I.D.	01 5000 B1
pH	pH units		SM423		7.0

Emma P. Popek
EMMA P. POPEK, Laboratory Director

GTEL ENVIRONMENTAL LABORATORIES, INC.

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72-6536

CUSTODY RECORD

Project Manager: Paul Horton

Phone #: 671-2387

FAX #:

Address: 4080 Pike Lane, Concord, CA

Site location: 404 Market Oakland, CA

Project Number: SFB 680-0254.72

Project Name: Safety Kleen, Oakland

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print): Jamie Bethell

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO3	H2SO4	ICE	NONE	OTHER	Sampling: DATE	TIME
5000	Baker1	01	1	X					X			X			6-19	12:05
5000	Baker1		1	X								X			6-19	12:06

ANALYSIS REQUEST

E-DOOR

BTEX 602 ☐ 8020 ☐ with MTBE ☐	BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐	TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel	Product I.D. by GC (SIMDIS) ☐	Total Oil & Grease 413.1 ☐ 413.2 ☐ 503A ☐	Total Petroleum Hydrocarbons 418.1 ☐ 503E ☐	EPA 601 ☐ 8010 ☐ DCA only ☐	EPA 602 ☐ 8020 ☐	EPA 608 ☐ 8080 ☐ PCBs only ☐	EPA 610 ☐ 8310 ☐	EPA 624 ☐ 8240 ☐ NBS +15 ☐	EPA 625 ☐ 8270 ☐ NBS +25 ☐	EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐	TCLP Metals ☐ VOA ☐ Semi VOA ☐	EPA Priority Pollutant Metals ☐ HSL ☐	LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐	CAM Metals ☐ STLC ☐ TTLC	Corrosivity ☐ Flashpoint ☐ Reactivity ☐	
						X											pH
																	X

SPECIAL HANDLING

24 HOURS X

EXPEDITED 48 Hours ☐

SEVEN DAY ☐

OTHER _____ (#) BUSINESS DAYS

QA/QC CLP Level ☐ Blue Level ☐

FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Lab Use Only Storage Location

Lot #: Work Order #:

Relinquished by Sampler:	Received by:	Received by Laboratory:
Date 6-19-90 Time 13:15	Date	Date 6/19/90 Time 1:40
Relinquished by:	Received by:	Way bill #
Date	Date	Time
Relinquished by:		

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#: D006687
CLIENT: Paul Horton
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT #: 203-680-5016.02
LOCATION: 404 Market Street, Oakland, CA

SAMPLED: 06/27/90 BY: J. Bethell
RECEIVED: 06/27/90
ANALYZED: 06/27/90 BY: P. Sweet
MATRIX: Water

TEST RESULTS

PARAMETER	UNITS	MDL	METHOD	SAMPLE # I.D.	01 FINAL
pH	pH units		SM423		7.2

Emma P. Popek
EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#: D006686
CLIENT: Paul Horton
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA

SAMPLED: 06/27/90 BY: J. Bethell
RECEIVED: 06/27/90
ANALYZED: 06/28/90 BY: R. Martino

MATRIX: Water
UNITS: ug/L (ppb)

PARAMETER	DL	SAMPLE # I.D.	01 FINAL
Dichlorodifluoromethane	0.10		<0.10
Chloromethane	0.13		<0.13
Vinyl Chloride	0.17		2.47
Bromomethane	0.11		<0.11
Trichlorofluoromethane	0.08		<0.08
Chloroethane	0.10		<0.10
Methylene chloride	0.03		<0.03
1,1-Dichloroethene	0.12		<0.12
1,1-Dichloroethane	0.04		<0.04
trans-1,2-Dichloroethene	0.06		<0.06
Chloroform	0.03		<0.03
1,2-Dichloroethane	0.06		<0.06
2,2-Dichloropropane	0.35		<0.35
1,1,1-Trichloroethane	0.08		2.58
Carbon tetrachloride	0.21		<0.21
cis-1,2-dichloroethane	0.12		<0.12
Bromodichloromethane	0.08		<0.08
1,2-Dichloropropane	0.04		<0.04
cis-1,3-Dichloropropene	0.50		<0.50
Trichloroethene	0.19		<0.19
Dibromochloromethane	0.05		<0.05
1,1,2-Trichloroethane	0.10		<0.10
Benzene	0.04		<0.04
trans-1,3-Dichloropropene	0.50		<0.50
Bromochloromethane	0.04		<0.04
Bromoform	0.12		<0.12
Dibromomethane	0.24		<0.24
1,1 Dichloropropene	0.10		<0.10
Dibromochloromethane	0.05		<0.05

DL = Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 524

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#:D006686

CLIENT: Paul Horton
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA

MATRIX: Water
UNITS: ug/L (ppb)

PARAMETER	DL	SAMPLE # I.D.	01 FINAL
Tetrachloroethene	0.14		<0.14
1,1,2,2-Tetrachloroethane	0.04		<0.04
Toluene	0.11		<0.11
Chlorobenzene	0.04		<0.04
Ethylbenzene	0.06		<0.06
Styrene	0.04		<0.04
1,2-Dichlorobenzene	0.03		1.39
1,3-Dichlorobenzene	0.12		<0.12
1,4-Dichlorobenzene	0.03		<0.03
Xylene (total)	0.05		<0.05
1,3 dichloropropane	0.04		<0.04
1,2- Dibromoethane	0.06		<0.06
Isopropylbenzene	0.15		<0.15
1,1,1,2- Tetrachloroethane	0.05		<0.05
Bromobenzene	0.03		<0.03
1,2,3 Trichloropropane	0.13		<0.13
n-Propylbenzene	0.04		<0.04
2-Chlorotoluene	0.04		<0.04
4-Chlorotoluene	0.06		<0.06
1,3,5-Trimethylbenzene	0.05		<0.05
tert-Butylbenzene	0.14		<0.14
sec-Butylbenzene	0.13		<0.13
p-Isopropyltoluene	0.12		<0.12
n-Butylbenzene	0.11		<0.11
1,2-Dibromo-3-chloropropane	0.26		<0.26
1,2,4-Trichlorobenzene	0.04		<0.04
Naphthalene	0.04		<0.04
Hexachlorobutadiene	0.11		<0.11
1,2,3-Trichlorobenzene	0.03		<0.03
1,2,4-Trimethylbenzene	0.13		<0.13

DL = Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 524

Emma P. Popek
EMMA P. POPEK, Laboratory Director

GTEL ENVIRONMENTAL LABORATORIES, INC

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72- 6540

CUSTODY RECORD

Project Manager: Paul Horton
Phone #:
FAX #:
Address: 4080 Pike Lane
Site location: 404 Market Oakland
Project Number: 0551.72 (SS 202-680-501 Gw02)
Project Name: Safety Kleen Oakland
I attest that the proper field sampling procedures were used during the collection of these samples.
Sampler Name (Print): Jamie Bethell

ANALYSIS REQUEST

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO3	H2SO4	ICE	NONE	OTHER	Sampling: DATE	TIME
Final	Baker II		2	X					X			X				
Final	Baker II	01	2	X								X				

BTEX 602 ☐ 8020 ☐ with MTBE ☐
BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐
TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel
Product I.D. by GC (SIMDIS) ☐
Total Oil & Grease: 413.1 ☐ 413.2 ☐ 503A ☐
Total Petroleum Hydrocarbons: 418.1 ☐ 503E ☐
EPA 601 ☐ 8010 ☐ DCA only ☐
EPA 602 ☐ 8020 ☐
EPA 608 ☐ 8080 ☐ PCBs only ☐
EPA 610 ☐ 8310 ☐
EPA 624 ☐ 8240 ☐ NBS +15 ☐
EPA 625 ☐ 8270 ☐ NBS +25 ☐
EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐
TCLP Metals ☐ VOA ☐ Semi VOA ☐
EPA Priority Pollutant Metals ☐ HSL ☐
LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐
CAM Metals ☐ STLC ☐ TTLC
Corrosivity ☐ Flashpoint ☐ Reactivity ☐
8240 X EPA 524.2
1,2,3

SPECIAL HANDLING
24 HOURS ☒
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____(#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Lab Use Only
Storage Location
Lot #:
Work Order #:

Relinquished by Sampler:	Received by:	Received by Laboratory:
Date: 6-27-90	Time: 1260	Date: 6/27/90
Relinquished by:	Received by:	Way bill #:
Date:	Time:	Date: 6/27
Relinquished by:		Time: 0pm

APPENDIX G
CERTIFICATION OF TANK DISPOSAL

ENVIRONMENTAL SERVICES
(DIVISION OF H&H SHIP SERVICE CO., INC.)

220 CHINA BASIN, SAN FRANCISCO, CA 94107 • DAY AND NIGHT: 543-4835

CERTIFICATE OF DISPOSAL

JUNE 11, 1990

H & H Ship Service Company hereby certifies to *UNIVERSAL ENGINEERING* that:

1. The storage tank(s), size(s) *ONE (1) 10,000 GALS.*

   removed from the *SAFETY-KLEEN CORPORATION*

   facility at *766 - 4TH STREET*
   OAKLAND, CALIFORNIA

   were transported to H & H Ship Service Company, 220 China Basin St., San Francisco, California 94107.

2. The following tank(s), H & H Job Number *4662*

   have been steamed cleaned, cut with approximately 2' X 2' holes, rendered harmless and disposed of as scrap metal.

3. Disposal site: *LEVIN METALS CORPORATION, RICHMOND, CALIFORNIA.*

4. The foregoing method of destruction/disposal is suitable for the materials involved, and fully complies with all applicable regulatory and permit requirements.

5. Should you require further information, please call (415) 543-4835.

Very Truly Yours,

Crewdrick Valrey
Operations Coordinator

ENVIRONMENTAL SERVICES
(DIVISION OF H&H SHIP SERVICE CO., INC.)

220 CHINA BASIN, SAN FRANCISCO, CA 94107 • DAY AND NIGHT: 543-4835

CERTIFICATE OF DISPOSAL

JUNE 11, 1990

H & H Ship Service Company hereby certifies to *UNIVERSAL ENGINEERING* that:

1. The storage tank(s), size(s) *TWO (2) 6,000 GALS.*

   removed from the *SAFETY-KLEEN CORPORATION*

   facility at *766 - 4TH STREET*
   OAKLAND, CALIFORNIA

   were transported to H & H Ship Service Company, 220 China Basin St., San Francisco, California 94107.

2. The following tank(s), H & H Job Number *4641*

   have been steamed cleaned, cut with approximately 2' X 2' holes, rendered harmless and disposed of as scrap metal.

3. Disposal site: *LEVIN METALS CORPORATION, RICHMOND, CALIFORNIA.*

4. The foregoing method of destruction/disposal is suitable for the materials involved, and fully complies with all applicable regulatory and permit requirements.

5. Should you require further information, please call (415) 543-4835.

Very Truly Yours,

Cleveland Valrey
Operations Coordinator

ENVIRONMENTAL SERVICES
(DIVISION OF H&H SHIP SERVICE CO., INC.)

220 CHINA BASIN, SAN FRANCISCO, CA 94107 • DAY AND NIGHT: 543-4835

CERTIFICATE OF DISPOSAL

JULY 09, 1990

H & H Ship Service Company hereby certifies to *UNIVERSAL ENGINEERING* that:

1. The storage tank(s), size(s) *ONE (1) 500 GALS.*

   removed from the *SAFETY KLEEN CORPORATION*

   facility at *766 - 4TH STREET*

   OAKLAND, CALIFORNIA

   were transported to H & H Ship Service Company, 220 China Basin St., San Francisco, California 94107.

2. The following tank(s), H & H Job Number *4941*

   have been steamed cleaned, cut with approximately 2' X 2' holes, rendered harmless and disposed of as scrap metal.

3. Disposal site: *LEVIN METALS CORPORATION, RICHMOND, CALIFORNIA.*

4. The foregoing method of destruction/disposal is suitable for the materials involved, and fully complies with all applicable regulatory and permit requirements.

5. Should you require further information, please call (415) 543-4835.

Very Truly Yours,

Steve Valrey
Operations Coordinator

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-91)
Please print or type. (Form designed for use on elite (12-pitch typewriter).

Toxic Substances Control Divisio
Sacramento, California

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

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No.: CAD0153294653
Manifest Document No.: 01703
2. Page 1 of 1

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

A. State Manifest Document Number: 90133403

B. State Generator's ID:

3. Generator's Name and Mailing Address: Safety Kleen Corporation, 404 Market Street, Oakland, California

4. Generator's Phone (415) 532-7742

5. Transporter 1 Company Name: UNIVERSAL ENGINERING
6. US EPA ID Number: CAT080013469

C. State Transporter's ID: 002375
D. Transporter's Phone: 209-746-6691

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: H+H ENVIRONMENTAL SERVICES, 220 CHINA BASIN, SAN FRANCISCO CA 94107
10. US EPA ID Number: CAD004771168

G. State Facility's ID: CAD004771168
H. Facility's Phone: (415) 543-4835

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 No.
a. ~~WASTE EMPTY Storage tank~~ RESIDUE MINERAL SPIRITS TANK NON RCRA HAZARDOUS WASTE SOLID	001	TP	5000	P	State 512 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
10,000 Gallon underground storage tank.
TANK HYDROBLASTED CLEANED ON 6-1990

K. Handling Codes for Wastes Listed Above
a. 01
b.
c.
d.

15. Special Handling Instructions and Additional Information
JOB # 4238 **H & H JOB #4652** JOB SITE SAFETY KLEEN 404 MARKET ST. OAKLAND, CALIF
APPROPRIATE CLOTHING AND RESPIRATOR

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this 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 international and national government regulations.

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] Safety Kleen	[signature]	06	06	90

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[signature]	06	05	90

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
CLEVELAND VALREY	[signature]	06	08	90

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Do Not Write Below This Line

GREEN: HAULER RETAINS

Please print or type. (Form designed for use on elite (12-pitch typewriter).

Toxic Substances Control Divis
Sacramento, Californ...

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAD059133141 | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Safty Kleen Corporation
766 4th Street
Oakland, CA

4. Generator's Phone (415) 832-1942

A. State Manifest Document Number 901338436 RECEIVED

B. State Generator's ID HAM61210-1202

5. Transporter 1 Company Name: Universal Engineering Inc. | 6. US EPA ID Number: CAT080010113141699 | C. State Transporter's ID 005207 | D. Transporter's Phone 707-746-5698

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
Chem Environmental Services
220 Chisholm
San Francisco, CA 94107

10. US EPA ID Number: CAD010417111615 | G. State Facility's ID CAD010417111615 | H. Facility's Phone 415-543-4835

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 No.
a. Waste Empty Storage Tank	001	TP	00500	P	State 312 / EPA/Other N/A
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
500 Gallon Underground Storage Tank, (Mineral Spir
(Waste Oil) 312 OIL

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

15. Special Handling Instructions and Additional Information
H+H # 04652
Wear protective clothing as needed.
Job# 4911

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this 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 international and national government regulations.

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Printed/Typed Name | Signature | Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Rico GARCIA | Signature | Month Day Year 10/7/90

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

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 100790

Do Not Write Below This Line

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

GREEN: HAULER RETAINS

GENERATOR — TRANSPORTER — FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7...

3U13343D

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-91)
Please print or type. (Form designed for use on elite (12-pitch typewriter).

Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

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

3. Generator's Name and Mailing Address
4. Generator's Phone

A. State Manifest Document Number: 90203783
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone

5. Transporter 1 Company Name	6. US EPA ID Number
7. Transporter 2 Company Name	8. US EPA ID Number
9. Designated Facility Name and Site Address	10. US EPA ID Number

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 No.
a.					State 512 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

RECEIVED
JUN 07 1990
Ans'd.....

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above: a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
JOB #4641

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this 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 international and national government regulations.

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Printed/Typed Name	Signature	Month	Day	Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials				
Printed/Typed Name	Signature	Month	Day	Year
			27	90

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
CLEVELAND VALREY		06	07	90

Do Not Write Below This Line

GENERATOR

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

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

GREEN: HAULER RETAINS

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-91)
Please print or type. (Form designed for use on elite (12-pitch typewriter).

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAD 0 [illegible] | Manifest Document No. [illegible] | 2. Page 1 of 2 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
SAFETY-KLEEN CORP.
[illegible] ST.
OAKLAND, CA. 94607
4. Generator's Phone [illegible]-7742

A. State Manifest Document Number 90133401
B. State Generator's ID

5. Transporter 1 Company Name [illegible] | 6. US EPA ID Number [illegible]
C. State Transporter's ID [illegible]
D. Transporter's Phone [illegible]

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 [illegible] | 10. US EPA ID Number [illegible]
G. State Facility's ID CAD 0 0 8 7 7 1 1 6 8
H. Facility's Phone [illegible]

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 No.
a. [illegible]	[illegible]	T[illegible]	[illegible]	P	State 512 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

RECEIVED
JUN 07 1990

J. Additional Descriptions for Materials Listed Above
TANK [illegible]

K. Handling Codes for Wastes Listed Above
a. 01 b.
c. d.

15. Special Handling Instructions and Additional Information
JOB #4641
[illegible] PROTECTIVE CLOTHING

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this 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 international and national government regulations.

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Printed/Typed Name [illegible] | Signature [signature] | Month Day Year [illegible]

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Richard [illegible] | Signature [signature] | Month Day Year [illegible] 90

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

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 CLEVELAND VALREY | Signature [signature] | Month Day Year 06 07 90

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Do Not Write Below This Line

GREEN: HAULER RETAINS

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

90133401

APPENDIX H
LABORATORY REPORTS OF SOIL SAMPLES

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#: D006284
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market Street, Oakland, CA
SAMPLED: 06/12/90 BY: J. Bethell
RECEIVED: 06/13/90
ANALYZED: 06/19/90 BY: F. Kha
MATRIX: Soil
UNITS: mg/Kg (ppm)

TEST RESULTS

PARAMETER	MDL	SAMPLE # I.D.	01 PIT 1	02 PIT 2	03 PIT 3	04 PIT 4	05 PIT 5
Total Petroleum Hydrocarbons as Mineral Spirits	10		12000	9500	2400	10000	9700

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: Modified EPA Method 8015

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#:D006284

CLIENT: Gary Long
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market Street, Oakland, CA
MATRIX: Soil
UNITS: mg/Kg (ppm)

TEST RESULTS

PARAMETER	MDL	SAMPLE #I.D.	06 PIT 6
Total Petroleum Hydrocarbons as Mineral Spirits	10		12000

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: Modified EPA Method 8015

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#: D006282
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market Street, Oakland, CA
SAMPLED: 06/12/90 BY: J. Bethell
ANALYZED: 06/18/90 BY: M. Verona
MATRIX: Soil
UNITS: mg/kg (ppm)

TEST RESULTS

COMPOUND	MDL	LAB # I.D.#	01 PIT 1	02 PIT 2	03 PIT 3	04 PIT 4
Benzene	0.5		<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Bromoform	0.5		<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5		<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5		<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
Chloroethane	0.5		<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1		<1	<1	<1	<1
Chloroform	0.5		<0.5	<0.5	<0.5	<0.5
Chloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5		<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5		12	12	15	16
1,3-Dichlorobenzene	0.5		1.2	1.3	1.0	1.1
1,4-Dichlorobenzene	0.5		6.5	6.6	6.6	7.3
Dichlorodifluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5		<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5		<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.2		1.3	2.0	0.4	0.3
trans-1,2-Dichloroethene	0.5		1.5	2.1	3.9	5.8
1,2-Dichloropropane	0.5		<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5		4.6	5.1	2.7	3.1
Methylene chloride	0.5		<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5		7.8	8.6	0.71	<0.5
Toluene	0.5		11	18	11	7.6
1,1,1-Trichloroethane	0.5		7.3	9.8	3.0	2.8
1,1,2-Trichloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5		1.7	3.4	<0.5	<0.5
Trichlorofluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	1		<1	<1	<1	<1
Xylenes	0.5		49	84	49	50

MDL = Method Detection Limit.

METHOD: EPA Method 8010/8020

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#: D006282

CLIENT: Gary Long
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market Street, Oakland, CA

MATRIX: Soil
UNITS: mg/kg (ppm)

TEST RESULTS

COMPOUND	MDL	LAB # I.D.#	05 PIT 5	06 PIT 6		
Benzene	0.5		<0.5	<0.5		
Bromodichloromethane	0.5		<0.5	<0.5		
Bromoform	0.5		<0.5	<0.5		
Bromomethane	0.5		<0.5	<0.5		
Carbon tetrachloride	0.5		<0.5	<0.5		
Chlorobenzene	0.5		1.0	0.6		
Chloroethane	0.5		<0.5	<0.5		
2-Chloroethylvinyl ether	1		<1	<1		
Chloroform	0.5		<0.5	<0.5		
Chloromethane	0.5		<0.5	<0.5		
Dibromochloromethane	0.5		<0.5	<0.5		
1,2-Dichlorobenzene	0.5		15	20		
1,3-Dichlorobenzene	0.5		0.9	1.6		
1,4-Dichlorobenzene	0.2		6.0	9.8		
Dichlorodifluoromethane	0.5		<0.5	<0.5		
1,1-Dichloroethane	0.5		<0.5	<0.5		
1,2-Dichloroethane	0.5		<0.5	<0.5		
1,1-Dichloroethene	0.2		0.5	0.4		
trans-1,2-Dichloroethene	0.5		3.8	4.0		
1,2-Dichloropropane	0.5		<0.5	<0.5		
cis-1,3-Dichloropropene	0.5		<0.5	<0.5		
trans-1,3-Dichloropropene	0.5		<0.5	<0.5		
Ethylbenzene	0.5		3.5	5.1		
Methylene chloride	0.5		<0.5	<0.5		
1,1,2,2-Tetrachloroethane	0.5		<0.5	<0.5		
Tetrachloroethene	0.5		1.1	0.7		
Toluene	0.5		7.5	11		
1,1,1-Trichloroethane	0.5		3.6	3.3		
1,1,2-Trichloroethane	0.5		<0.5	<0.5		
Trichloroethene	0.5		<0.5	<0.5		
Trichlorofluoromethane	0.5		<0.5	<0.5		
Vinyl Chloride	1		<1	<1		
Xylenes	0.5		45	78		

MDL = Method Detection Limit.

METHOD: EPA Method 8010/8020

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

06/21/90 rw

WORK ORD#: D006283
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market St., Oakland, CA
SAMPLED: 06/12/90 BY: J. Bethell
RECEIVED: 06/13/90
ANALYZED: 06/15/90 BY: R. Heines

TITLE 22 (C.A.M.)
TOTAL THRESHOLD LIMIT CONCENTRATION
TEST RESULTS

MATRIX: Soil
UNITS: mg/Kg (ppm)

PARAMETER	MDL	SAMPLE # I.D.	01 PIT 1
Antimony	25		(25
Arsenic	25		(25
Barium	1		39
Beryllium	1		(1
Cadmium	3		(3
Chromium	5		41
Cobalt	5		8
Copper	5		8
Lead	10		12
Mercury	0.02		(0.02
Molybdenum	25		(25
Nickel	5		(5
Selenium	50		(50
Silver	5		(5
Thallium	13		(13
Vanadium	5		22
Zinc	5		23

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: Mercury by EPA 7471; Antimony by EPA 3005/7040; Arsenic by EPA 3050/7060; Selenium by EPA 3050/7740; Silver by EPA 3005/7760; Thallium by EPA 3050/7840; Others by EPA 3050/6010.

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL ENVIRONMENTAL LABORATORIES, INC.

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72-7144

CUSTODY RECORD

Project Manager: P. Horton
Phone #:
FAX #:
Address:
Site location: 404 Market Street, Oakland
Project Number: SFB-6805016 02
Project Name:
Sampler Name (Print): J. Bethell

I attest that the proper field sampling procedures were used during the collection of these samples.

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO_3	H_2SO_4	ICE	NONE	OTHER	Sampling: DATE	TIME
Pit 1	Pit	01	1	X								X			6-12	1100
" 2		02	1	X								X				1105
" 3		03	1	X								X				1110
" 4		04	1	X								X				1115
" 5		05	1	X								X				1120
" 6		06	1	X								X				1125

ANALYSIS REQUEST

BTEX 602 ☐ 8020 ☐ with MTBE ☐
BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐
TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel
Product I.D. by GC (SIMDIS) ☐
Total Oil & Grease: 413.1 ☐ 413.2 ☐ 503A ☐
Total Petroleum Hydrocarbons: 418.1 ☐ 503E ☐
EPA 601 ☐ 8010 ☐ 8021 ☐ DCA only ☐
EPA 602 ☐ 8020 ☐
EPA 608 ☐ 8080 ☐ PCBs only ☐
EPA 610 ☐ 8310 ☐
EPA 624 ☐ 8240 ☐ NBS +15 ☐
EPA 625 ☐ 8270 ☐ NBS +25 ☐
EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐
TCLP Metals ☐ VOA ☐ Semi VOA ☐
EPA Priority Pollutant Metals ☐ HSL ☐
LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐
CAM Metals ☐ STLC ☐ STLC
Corrosivity ☐ Flashpoint ☐ Reactivity ☐
TPH as Mineral Spirits

SPECIAL HANDLING
24 HOURS ☐
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____(#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS: Regular TAT A-1

Lab Use Only Storage Location
Lot #: Work Order #: D006

Relinquished by Sampler	Received by:	Time	Date
	Paul Horton	2:10	6/12/90
Relinquished by:	Received by:	Time	Date
Relinquished by:	Received by Laboratory:	Time	Date
Anita Wong	Wey bill # Daisy Plus	12:30	6/13/90

6/19/90

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Client Number: SFB-680-0354.72
Consultant Project Number: 203-680-5016.02
Project ID: 404 Market
Oakland, CA
Work Order Number: D0-06-212

June 12, 1990

Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123

Enclosed please find the analytical results report prepared by GTEL for samples received on 06/08/90, under chain of custody number 72-6535.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project was performed in strict adherence to our QA/QC program to ensure sample integrity and to meet quality control criteria.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Emma P. Popek
Laboratory Director

Client Number: SFB-680-0354.72
Consultant Project Number: 203-680-5016.02
Project ID: 404 Market
Oakland, CA
Work Order Number: D0-06-212

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics in Soil

EPA Methods 5030 and 8020[a]

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986.

GTEL Sample Number		01*	02*		
Client Identification		EAST END	WEST END		
Date Sampled		06/08/90	06/08/90		
Date Extracted		06/09/90	06/09/90		
Date Analyzed		06/09/90	06/09/90		
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	< 0.1	0.01		
Toluene	0.005	6	4		
Ethylbenzene	0.005	< 0.1	< 0.1		
Xylene, total	0.015	34	28		
Detection Limit Multiplier		1	1		

* Detection limits raised due to matrix effect.

GTEL ENVIRONMENTAL LABORATORIES, INC.

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

06/12/90 rw

WORK ORD#: D006234
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market St., Oakland, CA
SAMPLED: 06/08/90 BY: J. Bethell
RECEIVED: 06/08/90
ANALYZED: 06/11/90 BY: F. Kha
MATRIX: Soil
UNITS: mg/Kg (ppm)

TEST RESULTS

PARAMETER	MDL	SAMPLE # I.D.	01 EAST END	02 WEST END		
Total Petroleum Hydrocarbons as Mineral Spirits	10		16000	30000		

MDL = Method Detection Limit: compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: Modified EPA Method 8015

Emma P. Popek
EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Client Number: SFB-[illegible]0354.72
Consultant Project Number: 203-680-5016.02
Project ID: 404 Market
Oakland, CA
Work Order Number: D0-06-213

June 13, 1990

Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123

Enclosed please find the analytical results report prepared by GTEL for samples received on 06/08/90, under chain of custody number 72-6535.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project was performed in strict adherence to our QA/QC program to ensure sample integrity and to meet quality control criteria.

If you have any question concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Emma P. Popek /AMB

Emma P. Popek
Laboratory Director

Table 1

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		01	02		
Client Identification		EAST END	WEST END		
Date Sampled		06/08/90	06/08/90		
Date Extracted		06/11/90	06/11/90		
Date Analyzed		06/11/90	06/11/90		
Analyte	Detection Limit, ug/Kg	Concentration, ug/Kg			
Chloromethane	500	< 500	< 500		
Bromomethane	500	< 500	< 500		
Vinyl chloride	500	< 500	< 500		
Chloroethane	500	< 500	< 500		
Methylene chloride	250	< 250	< 250		
Acetone	500	< 500	< 500		
Carbon disulfide	250	< 250	< 250		
1,1-Dichloroethene	250	< 250	< 250		
1,1-Dichloroethane	250	< 250	270		
1,2-Dichloroethene, total	250	2500	1900		
Chloroform	250	< 250	< 250		
1,2-Dichloroethane	250	< 250	< 250		
2-Butanone	500	< 500	< 500		
1,1,1-Trichloroethane	250	11000	17000		
Carbon tetrachloride	250	< 250	< 250		
Vinyl acetate	2500	< 2500	< 2500		
Bromodichloromethane	250	< 250	< 250		
1,2-Dichloropropane	250	< 250	< 250		
cis-1,3-Dichloropropene	250	< 250	< 250		
Trichloroethene	250	750	< 250		

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample extraction by EPA method 3550.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		01	02		
Client Identification		EAST END	WEST END		
Date Sampled		06/08/90	06/08/90		
Date Extracted		06/11/90	06/11/90		
Date Analyzed		06/11/90	06/11/90		
Analyte	Detection Limit, ug/Kg	Concentration, ug/Kg			
Dibromochloromethane	250	< 250	< 250		
1,1,2-Trichloroethane	250	< 250	< 250		
Benzene	250	< 250	250		
trans-1,3-Dichloropropene	250	< 250	< 250		
2-Chloroethylvinyl ether	500	< 500	< 500		
Bromoform	250	< 250	< 250		
4-Methyl-2-pentanone	500	< 500	< 500		
2-Hexanone	500	< 500	< 500		
Tetrachloroethene	250	4000	8400		
1,1,2,2-Tetrachloroethane	250	< 250	< 250		
Toluene	250	12000	17000		
Chlorobenzene	250	< 250	< 250		
Ethylbenzene	250	6000	6000		
Styrene	250	< 250	< 250		
1,2-Dichlorobenzene	250	15000	10000		
1,3-Dichlorobenzene	250	7800	2400		
1,4-Dichlorobenzene	250	8200	5900		
Xylene, total	250	70000	85000		
Trichlorofluoromethane	250	< 250	< 250		
Detection Limit Multiplier		1	1		

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample extraction by EPA method 3550.

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72 0535

CUSTODY RECORD

GTEL ENVIRONMENTAL LABORATORIES, INC

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

Project Manager: Paul Horton

Phone #: 671-2387

FAX #:

Address: 4080 Pike Lane, Concord

Site location: 404 Market Oakland, CA

Project Number: SFB-680-0354.72
203-680-5016.02

Project Name: Safety Kleen, Oakland

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print): Jamie Bothell

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO3	H2SO4	ICE	NONE	OTHER	Sampling: DATE	TIME
EastEnd	Tank #3	01	1		✓							✓			6-8	9:50
WestEnd	Tank #3	02	1		✓							✓			6-8	9:55

ANALYSIS REQUEST

BTEX 602 ☐ 8020 ☐ with MTBE ☐ BTEX/TPH ☐ 8020/8015 ☐ MTBE ☐ TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel ☐ Product I.D. by GC (SIMDIS) ☐ Total Oil & Grease: 413.1 ☐ 413.2 ☐ 503A ☐ Total Petroleum Hydrocarbons: 418.1 ☐ 503E ☐ EPA 601 ☐ 8010 ☐ DCA only ☐ EPA 602 ☐ 8020 ☐ PCBs only ☐ EPA 608 ☐ 8080 ☐ EPA 610 ☐ 8310 ☐ EPA 624 ☐ 8240 ☐ NBS +15 ☐ EPA 625 ☐ 8270 ☐ NBS +25 ☐ EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐ TCLP Metals ☐ VOA ☐ Semi VOA ☐ EPA Priority Pollutant Metals ☐ HSL ☐ LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐ CAM Metals ☐ STLC ☐ TTLC Corrosivity ☐ Flashpoint ☐ Reactivity ☐

SPECIAL HANDLING

24 HOURS ☐
EXPEDITED 48 Hours ☒ Tues. Mor-
SEVEN DAY ☐
OTHER _____ (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS: TPH as Mineral Spirits

Lab Use Only Storage Location

Lot #: Work Order #:

Relinquished by Sampler:	Received by:	Received by:	Received by Laboratory:
Date 6-8-90	Time 13:45	Time	Time
Relinquished by:	Received by:	Received by:	Relinquished by:
Date	Time	Time	Date
Relinquished by:			
Date			

6-8 BOS

APPENDIX I
CERTIFICATE OF SOIL DISPOSAL

PORT COSTA MATERIALS, INC.
P.O. Box 50
9000 Carquinez Scenic Drive
Port Costa, California 94569
(415) 228-7266
(800) 323-2922
FAX: (415) 787-1726
Telex: 705984

CERTIFICATE OF REMEDIATION OF HYDROCARBON CONTAMINATED SOILS

Supplier: Groundwater Technology
4080 Pike Lane
Concord, CA 94520

Generator: Safety Kleen Corp.
404 Market St
Oakland, CA 94607

Certificate Number: 0009
Dated: August 30, 1990

PORT COSTA MATERIALS, INC., a California corporation ("Company"), located at and the operator of the above "Facility" hereby certifies as follows:

1. The Company has received from the above "Generator" (Safety Kleen Corp.), 984.33 tons of hydrocarbon contaminated soil ("HC Soil") as transported by or on behalf of Generator by Dillard Trucking, contracted through Groundwater Technology to such facility, and referred to as lot number 000107, which HC Soil was received at the Facility on August 14,1990, (as part of a shipment consisting of 984.33 tons in total). The Company operates its Facility and processes such HC Soil pursuant to permits issued by applicable governmental authorities.

2. In receiving and processing the HC Soil and in providing this Certificate, the Company has relied upon and is relying on (a) the representation of the Generator that the HC Soil does not contain any materials classified as, and is not classified as, "hazardous waste" under the applicable provisions of the Federal and California law and has been managed and may be treated as other than "hazardous waste" and (b) the Generator has independent written certifications from applicable governmental agencies or certified independent testing laboratories that the HC Soil does not contain any materials classified as, and is not classified as, "hazardous waste" under said applicable law.

3. The HC Soil has been treated by being introduced into the manufacturing process at the Facility (in which it may be blended with a mixture of natural shale) feeding into a rotary kiln in which at high temperature the contaminants are consumed by thermal processing and inert materials are produced. The HC Soil was processed in this manner during the period from August 15 to August 30, and all of the HC Soil covered by this Certificate was completed being processed on August 30, 1990. In the treatment of the HC Soil, releases and emissions have been in accordance with the requirements of the applicable operating permits of the Facility.

4. Upon completion of the treatment, the HC Soil has been remediated, and the end product is an inert substance which does not constitute a "hazardous waste" under the applicable provisions of the Federal and California law.

5. The Company shall indemnify, defend and hold harmless the Generator from and against any enforcement actions by any governmental authority in the event that any of the representations by the Company set forth in this Certificate are materially inaccurate; provided however that this indemnity shall be limited to a maximum of the amount paid to the Company by the Generator for processing this HC Soil.

This Certificate is executed on this 14th day of September 1990

PORT COSTA MATERIALS, INC.

By: _____
Ivert W. Stokes,
Assistant Secretary

PCM/8/90

SUPERIOR ANALYTICAL LABORATORIES, INC.
825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512
DOHS #319
DOHS #220

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 81394
CLIENT: Port Costa Materials
CLIENT JOB NO.: 107GT9007A

DATE RECEIVED: 08/16/90
DATE REPORTED: 08/22/90

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (mg/Kg)(mg/L) Mineral Spirits Range*	Diesel Range
1	SEAL TANK	ND<1	9
2	ROTARY DUST	240	440
3	POST KILN #1	ND<10	ND<10
4	POST KILN #2	ND<10	ND<10
5	POST KILN #3	ND<10	ND<10
6	POST KILN #4	ND<10	ND<10
7	POST KILN #5	ND<10	ND<10
8	PRE KILN	9000	ND<200
9	PILE #1	19000	ND<200
10	McCLAN #1	12000	ND<200
11	PRE SILO #1	24000	ND<200
12	POST SILO #2	21000	ND<200
13	KILN #2	20000	ND<200

mg/kg - parts per million (ppm)
* Mineral Spirits Range Hydrocarbon quantified as Gasoline.

Method Detection Limit for Gasoline and Diesel in Soil: 10 mg/Kg
Method Detection Limit for Gasoline and Diesel in Water: 1 mg/L

QAQC Summary:

Daily Standard run at 200mg/L: RPD Gasoline = 11%
RPD Diesel = 12%
MS/MSD Average Recovery = 118%: Duplicate RPD = 6%

Richard Srna, Ph.D.

Dorena Srna
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORIES, INC.
825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512
DOHS #319
DOHS #220

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 81394
CLIENT: Port Costa Materials
CLIENT JOB NO.: 107GT9007A

DATE RECEIVED:08/16/90
DATE REPORTED:08/22/90

ANALYSIS FOR TOTAL OIL AND GREASE
by Method 503E

LAB #	Sample Identification	Concentration(mg/L)(mg/Kg) Oil & Grease
1	SEAL TANK	ND<5
2	ROTARY DUST	ND<20
3	POST KILN #1	ND<20
4	POST KILN #2	ND<20
5	POST KILN #3	ND<20
6	POST KILN #4	ND<20
7	POST KILN #5	ND<20
8	PRE KILN	200

mg/L - parts per million (ppm)

Method Detection Limit for Oil and Grease in Soil: 20mg/Kg
Method Detection Limit for Oil and Grease in Water: 5mg/L

QAQC Summary: Duplicate RPD : 0%

Richard Srna, Ph.D.

Dorena Srna

Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

26/08/90 rw

WORK ORD#: D006092
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA
SAMPLED: 06/05/90 BY: J. Bethell
RECEIVED: 06/05/90
ANALYZED: 06/07/90 BY: M. Ly

MATRIX: Soil
UNITS: ug/Kg (ppb)

PARAMETER	DL	SAMPLE # I.D.	01 COMP 1		
Chloromethane	500		<500		
Bromomethane	500		<500		
Vinyl chloride	500		<500		
Chloroethane	500		<500		
Methylene chloride	250		<250		
Acetone	5000		<5000		
Carbon disulfide	250		<250		
1,1-Dichloroethene	250		<250		
1,1-Dichloroethane	250		<250		
1,2-Dichloroethene, total	250		<250		
Chloroform	250		<250		
1,2-Dichloroethane	250		<250		
2-Butanone	5000		<5000		
1,1,1-Trichloroethane	250		<250		
Carbon tetrachloride	250		<250		
Vinyl acetate	2500		<2500		
Bromodichloromethane	250		<250		
1,2-Dichloropropane	250		<250		
cis-1,3-Dichloropropene	250		<250		
Trichloroethene	250		<250		
Dibromochloromethane	250		<250		
1,1,2-Trichloroethane	250		<250		
Benzene	250		<250		
trans-1,3-Dichloropropene	250		<250		
2-Chloroethylvinylether	500		<500		
Bromoform	250		<250		
4-Methyl-2-pentanone	2500		<2500		
2-Hexanone	2500		<2500		

DL = Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 8240

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#:D006093

CLIENT: Gary Long
PROJECT#: SFE-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA
MATRIX: Soil
UNITS: ug/Kg (ppb)

PARAMETER	DL	SAMPLE # I.D.	01 COMP 1
Tetrachloroethene	250		<250
1,1,2,2-Tetrachloroethane	250		<250
Toluene	250		<250
Chlorobenzene	250		<250
Ethylbenzene	250		<250
Styrene	250		<250
1,2-Dichlorobenzene	250		1000
1,3-Dichlorobenzene	250		<250
1,4-Dichlorobenzene	250		350
Xylene (total)	250		430
Trichlorofluoromethane	250		<250

DL = Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 8240

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

07/09/90 lzo

WORK ORD#:D006094
CLIENT: Paul Horton
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA
SAMPLED: 06/05/90 BY: J. Bethell
RECEIVED: 06/05/90
ANALYZED: 06/07/90 BY: M .Ly

MATRIX: Soil
UNITS: mg/L (ppm)

PARAMETER	DL	SAMPLE # I.D.	01 COMP1
Chloromethane	0.01		<0.01
Bromomethane	0.01		<0.01
Vinyl chloride	0.01		<0.01
Chloroethane	0.01		<0.01
Methylene chloride	0.005		<0.005
Acetone	0.01		0.026
Carbon disulfide	0.005		0.028
1,1-Dichloroethene	0.005		<0.005
1,1-Dichloroethane	0.005		<0.005
1,2-Dichloroethene, total	0.005		<0.005
Chloroform	0.005		<0.005
1,2-Dichloroethane	0.005		<0.005
2-Butanone	0.01		<0.01
1,1,1-Trichloroethane	0.005		<0.005
Carbon tetrachloride	0.005		<0.005
Vinyl acetate	0.05		<0.05
Bromodichloromethane	0.005		<0.005
1,2-Dichloropropane	0.005		<0.005
cis-1,3-Dichloropropene	0.005		<0.005
Trichloroethene	0.005		<0.005
Dibromochloromethane	0.005		<0.005
1,1,2-Trichloroethane	0.005		<0.005
Benzene	0.005		<0.005
trans-1,3-Dichloropropene	0.005		<0.005
2-Chloroethylvinylether	0.01		<0.01
Bromoform	0.005		<0.005
4-Methyl-2-pentanone	0.01		<0.01
2-Hexanone	0.01		<0.01

DL = Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 8240 (TCLP)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

WORK ORD#:D006094

CLIENT: Paul Horton
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market, Oakland, CA
MATRIX: Soil
UNITS: mg/L (ppm)

PARAMETER	DL	SAMPLE # I.D.	01 COMP 1
Tetrachloroethene	0.005		<0.005
1,1,2,2-Tetrachloroethane	0.005		<0.005
Toluene	0.005		<0.005
Chlorobenzene	0.005		<0.005
Ethylbenzene	0.005		<0.005
Styrene	0.005		<0.005
1,2-Dichlorobenzene	0.005		0.058
1,3-Dichlorobenzene	0.005		<0.005
1,4-Dichlorobenzene	0.005		0.020
Xylene (total)	0.005		0.041
Trichlorofluoromethane	0.005		<0.005

DL = Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: EPA 8240 (TCLP)
This report replaces one of the same number dated 06/08/90

Emma P. Popek

EMMA P. POPEK, Laboratory Director

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

06/12/90 rw

WORK ORD#: D006093
CLIENT: Gary Long
Safety Kleen
777 Big Timber Road
Elgin, IL 60123
PROJECT#: SFB-680-0354.72
CONSULTANT PROJECT#: 203-680-5016.02
LOCATION: 404 Market St., Oakland, CA
SAMPLED: 06/05/90 BY: J. Bethell
RECEIVED: 06/05/90
ANALYZED: 06/08/90 BY: R. Heines

MATRIX: Soil
UNITS: mg/L (ppm)

EP TOXICITY TEST RESULTS

PARAMETER	MDL	SAMPLE # I.D.	@1 COMP1			
Arsenic	0.5		(0.5			
Barium	0.02		0.85			
Cadmium	0.05		(0.05			
Chromium (total)	0.1		0.26			
Lead	0.2		0.41			
Mercury	0.0002		0.0002			
Selenium	1		(1			
Silver	0.1		(0.1			

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHOD: Mercury by EPA 1310/7471; other metals by EPA 1310/6010.

Emma P. Popek

EMMA P. POPEK, Laboratory Director

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72-6534

GTEL ENVIRONMENTAL LABORATORIES, INC.

4080- Pike Lane
Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
800-423-7143 (Outside CA)

Project Manager: Paul Horton

Phone #: 671-2387

FAX #:

Address: 4080 -Pike Lane, Concord

Site location: 404 Market Oakland, CA

Project Number: 5FB-680-0354.72 / 02-680-5016.02

Project Name: Safetykleen, Oakland

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print): Jamie Bethell

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO3	H2SO4	ICE	NONE	OTHER	Sampling: DATE	TIME
Comp 1	20,20	01	1		X							X			6-5-92	11:55

ANALYSIS REQUEST B-2

P.O.

BTEX 602 ☐ 8020 ☐ with MTBE ☐	BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐	TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel	Product I.D. by GC (SIMDIS) ☐	Total Oil & Grease 413.1 ☐ 413.2 ☐ 503A ☐	Total Petroleum Hydrocarbons 418.1 ☐ 503E ☐	EPA 601 ☐ 8010 ☐ DCA only ☐	EPA 602 ☐ 8020 ☐	EPA 608 ☐ 8080 ☐ PCBs only ☐	EPA 610 ☐ 8310 ☐	EPA 624 ☐ 8240 X	EPA 625 ☐ 8270 ☐	EPTOX: Metals X	TCLP Metals ☐ VOA X	EPA Priority Pollutant Metals ☐	LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐	CAM Metals ☐ STLC ☐ TTLC	Corrosivity ☐	Flashpoint ☐	Reactivity ☐	NBS +15 ☐	NBS +25 ☐	Pesticides ☐	Herbicides ☐	Semi VOA ☐	HSL ☐	Org. Lead ☐
										X		X	X											

SPECIAL HANDLING

24 HOURS ☐
EXPEDITED 48 Hours X
SEVEN DAY ☐
OTHER _____ (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Lab Use Only Storage Location

Lot #: Work Order #:

CUSTODY RECORD

Relinquished by Sampler:	Relinquished by:	Relinquished by:
Date 6-5-92	Date	Date
Time 12:19	Time	Time

Received by:	Received by:	Received by Laboratory:
		Date 6-5-92
		Time 8:20

Lab #

GTEL
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Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

07/12/90 mh

WORK ORD#: C007223
CLIENT: Paul Horton
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: SFB-680-0354.72
CONS PROJ #: 203-680-5016.03
LOCATION: 404 Market St.
Oakland, CA
SAMPLED: 07/09/90 BY: J. Bethell
ANALYZED: 07/09/90 BY: M. Verona
MATRIX: Soil
UNITS: mg/kg (ppm)

TEST RESULTS

COMPOUND	MDL	LAB # I.D.#	01 COMP 2	02 COMP 3		
Benzene	0.5		<0.5	<0.5		
Bromodichloromethane	0.5		<0.5	<0.5		
Bromoform	0.5		<0.5	<0.5		
Bromomethane	0.5		<0.5	<0.5		
Carbon tetrachloride	0.5		<0.5	<0.5		
Chlorobenzene	0.5		<0.5	<0.5		
Chloroethane	0.5		<0.5	<0.5		
2-Chloroethylvinyl ether	1		<1	<1		
Chloroform	0.5		<0.5	<0.5		
Chloromethane	0.5		<0.5	<0.5		
Dibromochloromethane	0.5		<0.5	<0.5		
1,2-Dichlorobenzene	0.5		0.66	0.76		
1,3-Dichlorobenzene	0.5		<0.5	<0.5		
1,4-Dichlorobenzene	0.5		<0.5	<0.5		
Dichlorodifluoromethane	0.5		<0.5	<0.5		
1,1-Dichloroethane	0.5		<0.5	<0.5		
1,2-Dichloroethane	0.5		<0.5	<0.5		
1,1-Dichloroethene	0.2		<0.2	<0.2		
trans-1,2-Dichloroethene	0.5		<0.5	<0.5		
1,2-Dichloropropane	0.5		<0.5	<0.5		
cis-1,3-Dichloropropene	0.5		<0.5	<0.5		
trans-1,3-Dichloropropene	0.5		<0.5	<0.5		
Ethylbenzene	0.5		<0.5	<0.5		
Methylene chloride	0.5		<0.5	<0.5		
1,1,2,2-Tetrachloroethane	0.5		<0.5	<0.5		
Tetrachloroethene	0.5		<0.5	<0.5		
Toluene	0.5		<0.5	<0.5		
1,1,1-Trichloroethane	0.5		<0.5	<0.5		
1,1,2-Trichloroethane	0.5		<0.5	<0.5		
Trichloroethene	0.5		<0.5	<0.5		
Trichlorofluoromethane	0.5		<0.5	<0.5		
Vinyl Chloride	1		<1	<1		
Xylenes	0.5		<0.5	<0.5		

MDL = Method Detection Limit.
METHOD: EPA 8010/8020.

EMMA P. POPEK, Laboratory Director

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(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

07/19/90 mh

WORK ORD#: C007224
CLIENT: Paul Horton
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: SFB-680-0354.72
CONS PROJ#: 203-680-5016.03
LOCATION: 404 Market St., Oakland, CA
SAMPLED: 07/09/90 BY: J. Bethell
RECEIVED: 07/09/90
ANALYZED: 07/13/90 BY: J. Gomez

TITLE 22 (C.A.M.)
TOTAL THRESHOLD LIMIT CONCENTRATION
TEST RESULTS

MATRIX: Soil
UNITS: mg/Kg (ppm)

PARAMETER	MDL	SAMPLE # I.D. 01 COMP 2	02 COMP 3			
Antimony	25	(25	(25			
Arsenic	0.25	0.83	1.5			
Barium	1	38	47			
Beryllium	1	(1	(1			
Cadmium	2	2	2			
Chromium	1	32	35			
Cobalt	1	7	7			
Copper	2	15	12			
Lead	5	10	22			
Mercury	0.02	0.04	0.03			
Molybdenum	1	8	9			
Nickel	5	(5	(5			
Selenium	0.5	(0.5	(0.5			
Silver	1	6	(1			
Thallium	10	(10	(10			
Vanadium	2	22	25			
Zinc	2	26	42			

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.

METHODS: Mercury by EPA 7471; Antimony by EPA 3005/7040; Arsenic by EPA 3050/7060; Selenium by EPA 3050/7740; Others by EPA 3050/6010.

EMMA P. POPEK, Laboratory Director

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Concord, CA 94520
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(800) 423-7143 *from outside California*

07/12/90 mh

WORK ORD#: C007225
CLIENT: Paul Horton
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: SFB-680-0354.72
CONS PROJ #: 203-680-5016.03
LOCATION: 404 Market St.
Oakland, CA
SAMPLED: 07/09/90 BY: J. Bethell
ANALYZED: 07/10/90 BY: F. Kha
MATRIX: Soil
UNITS: mg/Kg (ppm)

TEST RESULTS

PARAMETER	MDL	SAMPLE # I.D.	01 COMP 2	02 COMP 3			
Total Petroleum Hydrocarbons as Mineral Spirits	10		7800	4400			

MDL = Method Detection Limit; compound below this level would not be detected.
Results rounded to two significant figures.
METHOD: Modified EPA Method 8015

EMMA P. POPEK, Laboratory Director

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(800) 423-7143 *from outside California*

WORK ORD#: C007325
CLIENT: Paul Horton
Groundwater Technology, Inc.
4080-D Pike Lane
Concord, CA 94520
PROJECT#: SFB-680-0354.72
CONS. PROJECT#: 203-680-5016.03
LOCATION: 404 Market St.,Oakland, CA

SAMPLED: 07/09/90 BY: J. Bethell
RECEIVED: 07/12/90
ANALYZED: 07/16/90 BY: P. Sweet
MATRIX: Water

TEST RESULTS

PARAMETER	UNITS	MDL	METHOD	SAMPLE # I.D.	01 COMP 2	02 COMP 3
Ignitability (Soil)	deg F		EPA1010		125	NF (160

EMMA P. POPEK, Laboratory Director

C0070825

GTEL ENVIRONMENTAL LABORATORIES, INC.

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Concord, CA 94520
415-685-7852

800-544-3422 (In CA)
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CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

72- 7146

CUSTODY RECORD

Project Manager: Paul Horton
Phone #: 671-2387
FAX #:
Site location: 404 Market
Address: 4080 - Pike Lane Suite "D" Oakland, CA
Project Number: SFB-680-0354.72 203-680-5016.03
Project Name: Safeway, Oakland
Sampler Name (Print): Jamie Bethell

I attest that the proper field sampling procedures were used during the collection of these samples.

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix: WATER	SOIL	AIR	SLUDGE	OTHER	Method Preserved: HCl	HNO3	H2SO4	ICE	NONE	OTHER	Sampling: DATE	TIME
Comp2	Soil Pile	01	2		X							X			7-9	12:10
Comp3	Soil Pile	02	2		X							X			7-9	12:15

ANALYSIS REQUEST

proj. M-2

BTEX 602 ☐ 8020 ☐ with MTBE ☐	BTEX/TPH Gas 602/8015 ☐ 8020/8015 ☐ MTBE ☐	TPH as ☐ Gas ☐ Diesel ☐ Jet Fuel	Product I.D. by GC (SIMDIS) ☐	Total Oil & Grease: 413.1 ☐ 413.2 ☐ 503A ☐	Total Petroleum Hydrocarbons: 418.1 ☐ 503E ☐	EPA 601 ☐ 8010 ☐ DCA only ☐	EPA 602 ☐ 8020 ☐	EPA 608 ☐ 8080 ☐ PCBs only ☐	EPA 610 ☐ 8310 ☐	EPA 624 ☐ 8240 ☐ NBS +15 ☐	EPA 625 ☐ 8270 ☐ NBS +25 ☐	EPTOX: Metals ☐ Pesticides ☐ Herbicides ☐	TCLP Metals ☐ VOA ☐ Semi VOA ☐	EPA Priority Pollutant Metals ☐ HSL ☐	LEAD 7420 ☐ 7421 ☐ 239.2 ☐ 6010 ☐ Org. Lead ☐	CAM Metals ☐ STLC ☒ TTLC	Corrosivity ☐ Flashpoint ☐ Reactivity ☐
						X	X									X	X
						X	X									X	X

TPH as Mineral Spirits
Ignitability

SPECIAL HANDLING
24 Hours ☐
EXPEDITED 48 Hours ☒
SEVEN DAY ☐
OTHER 10 (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)
Ignitibility - added per P. Horton 7/12/90 verb

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS: QM90050

Lab Use Only Storage Location
Lot #: Work Order #:
NEW # 01173

Relinquished by Sampler	Date	Time	Received by:
	7-9-90	1:05pm	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:

Way bill #

APPENDIX J

AS BUILT DRAWINGS
(SHEETS 1-4)

APPENDIX K
COMPACTION TEST RESULTS

KLEINFELDER

NUCLEAR DENSITY FIELD FORM

FILE NO.: 1-0309-01 DATE: 06-27-10 RESULTS REPORTED TO: John Dees
JOB NAME: Oakland Density Testing
TECHNICIAN: E.Z. TEST LOCATIONS SELECTED BY: E.Z. OF: (COMPANY)

[X] COMPACTION OBSERVATION [ ] FULL-TIME OBSERVATION [ ] PART-TIME OBSERVATION

TIME: TESTS AND OBSERVATIONS _____ RETESTS _____ GAUGE NO. 6374 DENSITY _____ MOISTURE _____

TEST NO.	PROBE DEPTH (IN)	APPROXIMATE LOCATION	DEPTH BELOW FSG	FIELD		LABORATORY		CURVE NO.	PERCENT COMPACTION	SPECIFIED COMPACTION	REMARKS
				MOISTURE CONTENT	DENSITY WET / DRY	OPTIMUM MOISTURE	DENSITY WET / DRY				
1	12"	Backfill Over Solvent Storage Tanks South side of New-Solvent tanks	-6"	8.6	141.9 / 130.7	6.9	140.6		93	95	
2	12"	SE corner of site	"	6.2	141.9 / 133.6	"	"		95	"	-95.25 Pass
3	12"	Between the tanks	"	7.4	144.1 / 134.2	"	"		95	"	Jamie Bethell
4	12"	N. side of old-Solvent tanks.	"	5.9	145.5 / 137.3	"	"		98	"	Groundwater Tech

Observations of grading operations indicate fill tested does (does not) meet specifications

☐ There are no unresolved failures to date.

The following tests do not comply with project specifications and/or soils report.

Date: _____ Test No. _____

Date: _____ Test No. _____

Date: _____ Test No. _____

KLEINFELDER

TECHNICIAN'S DAILY REPORT

FILE NO: _____ ARRIVE 3:25PM DEPART _____

JOB NAME: _____ MILES _____

DATE: _____ WEATHER Sunny, Warm

AREAS TESTED: ☐ BUILDING PAD ☐ TRENCHES ☐ LANDSCAPE ☐ SG ☐ ASB
☒ PARKING LOT ☐ ROADWAY ☐ ENG. FILL ☒ AB ☐ AC

OTHER (Specify): _____

SPECIFIC AREAS TESTED: _____

EQUIPMENT USED TO OBTAIN COMPACTION: ☐ SHEEPSFOOT ☒ STEEL-WHEEL ROLLER PA-30
☒ VIBRATORY PLATE ☐ HAND WHACKER ☐ HYDRAULIC HAMMER
☐ MANUFACTURER/TYPE: Wacker Turtle (large)

MATERIAL SAMPLE: Description: 3/4" AB

Location: Storage Tank area

Purpose: Curve

OPERATIONS OBSERVED: _____

REMARKS: _____

Reviewed: _____ Signed: _____

MH20-04

APPENDIX L
TANK INTEGRITY TESTING

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER — Name: SAFETY KLEEN; Address: 404 MARKET ST; Representative: OAKLAND; Telephone
2. OPERATOR — Name; Address; Representative; Telephone
3. REASON FOR TEST (Explain Fully): Annual Compliance with State under ground storage reg. requirement
4. WHO REQUESTED TEST AND WHEN — Name; Title; Company or Affiliation; Address; Date; Telephone
5. TANK INVOLVED (Use additional lines for manifolded tanks) — Identify by Direction: EAST; Capacity: 12000; Brand/Supplier: AMA; Grade: WATER; Address, Age: ALAN; Date/Purpose: SEAL
6. INSTALLATION DATA — Location: South side BASE; Date: Concrete; Dimensions, Shape, Material, Depth, Thickness, Double Wall, Fiberglass, Steel, Concrete, etc.: 4"; Piping: Type: 2"; Material: ALLA; Safety Devices, Valves, & Vacuum
7. UNDERGROUND WATER — Depth to the Water table: N/A; Is the water over the tank? Yes ☐ No ☐
8. FILL-UP ARRANGEMENTS — Notice to be filled ___ hr. ___ Date; Arranged by ___ Name; Extra product to "top off" and non-tank stable, Piles and who to provide? Consider H2O Leak; Provided or other access for visible or inquiry ___ Company; Telephone
9. CONTRACTOR, MECHANICS, any other personnel involved — Name; Title; Telephone
10. OTHER INFORMATION OR REMARKS — Additional information on any items above. Difficulty or others to be added when testing is in progress or completed. Visitors or observers present during test, etc.
11. TEST RESULTS — Tests were made on the above tank systems in accordance with test procedures prescribed by or detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Inflated	Date Tested
EAST	tight	-.015	7-2-50

12. SENSOR CERTIFICATION — 10/87; Date: #2317; Serial No. of Tester Sensor
13. This is to certify that these tank systems were tested on the date(s) shown, Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329. Name: Tim Sousa; Organization 1: 1066; Organization 2: ___
TIMMERMAN ENGINEERING CONSTRUCTION — P.O. BOX 4479 — WALNUT CREEK, CA 94596
Project

14. SAFETY KLEEN — 404 MARKET ST. — OAKLAND — CA. — 7-2-50
Name of Supplier, Owner or Owner | Address, No. and Street(s) | City | State | Date of Test

15. TANK TO TEST: EAST #1 (Identify by direction); WATER (Brand and Grade)

15a. BRIEF DIAGRAM OF TANK FIELD

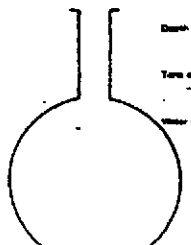
16. CAPACITY — Nominal Capacity: 12000 Gallons; By most accurate capacity chart available: 11,995 Gallons
From: ☐ Blueprint Chart ☐ Tank Manufacturer's Chart ☐ Company Engineering Data ☐ Charts supplied with ☐ Other

17. FILL-UP FOR TEST — Stick Water Bottom before fill-up: 0 in. ___ Gallons ___ Tank Diameter: 95 in.

	Gallons	Total Gallons on Hand
Inventory		11,995
TOPPING		10
Transfer total to Line 23a		11,905

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK — ☐ Water in tank ☐ Lateral being tested with LVLLT ☐ High water table in tank excavation
Use manufacturer recommended procedures. Check below and record procedure in log (27).
Use maximum allowable test pressure for all tanks.
Four pound rule does not apply to double-walled tanks.
Complete items below

1. Is four pound rule requested? Yes ☐ No ☑
2. Height to 12" mark from bottom of tank: ___ in.
3. Pressure at bottom of tank: ___ P.S.I.
4. Pressure at top of tank: ___ P.S.I.



NOTES: DOUBLE WALL

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY — Bottom of tank to grade*: 147 in.; Add 30" for "T" probe only: 30 in.; Total tubing to assemble — approximate: 177 in.

20. EXTENSION HOSE SETTING — Tank top to grade*: 52 in.; Ground hose on outside tank 4" or above; Bottom tank top ___ in.; *If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation: 14371 digits = 65.6 °F Between

23. Digits per °F or range of expected change: 326 digits

COEFFICIENT OF EXPANSION (Complete after circulation)

24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity ___
Hydrometer employed ___ °F
Observed Sample Temperature ___ °F
Corrected A.P.I. Gravity @ 60°F. From Table A ___
Coefficient of Expansion for Measured Product From Table B ___
Transfer COE to Line 25b

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☐ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD
Type of Product ___
Hydrometer Employed ___ °F
Temperature in Tank After Circulation ___ °F
Temperature of Sample ___ °F
Difference (+/-) ___ °F
Observed A.P.I. Gravity ___
Reciprocal ___ Page # ___
Total Quantity in Tank (11 or 17): 11905 — Reciprocal ___ = Volume change in one tank per °F
Transfer to Line 26a

24c. FOR TESTING WITH WATER use Tables C & D
Water Temperature after Circulation Table C: 65.4 °F
Coefficient of Water Table D: .00001625
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b

25. (a) 11905 Total quantity in tank (16 or 17) × (b) 0.00010625 Coefficient of expansion for tested product = (c) 12.641906 3 gallons Volume change in this tank per °F

26. (a) 12.641906 3 Volume change per °F (25 or 24b) × 326 Degrees per °F in test Range (23) = 0.0758005 Volume change per degree Carried to 4 decimal places — Test Factor (.05 or .10) 0.05 or .10 = .0379

LOG OF TEST PROCEDURES

28. DATE / Time (24 hr.)	Record details of setting up and running test. (Use full length of time if needed.)	Reading #	29. PRESSURE CONTROL: Barrel/pipe Level in Inches: Beginning of Reading	29. PRESSURE CONTROL: Barrel/pipe Level in Inches: Level at which Restored	31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL: 32. Product in Gallons: Before Reading	32. Product in Gallons: After Reading	33. Product Replaced (+) Product Recovered (-)	34. TEMPERATURE COMPENSATION USE FACTOR (a): Thermal Coeff. Reading	Liquid Coeff. (b)	Compensation (a2 + b2) + Expansion + Contraction -	36. NET VOLUME CHANGING EACH READING: Temperature Adjustment Previous Minus Expansion (+) or Contraction (-) (Col.VI — 4Col.IV)	35. ACCUMULATED CHANGE: At Low Level Leakage Change per Hour (NFPA criteria)
07:20	ARRIVED JOB SITE											
	SET UP TEST EQUIPMENT											
09:30	START REPLACEMENT							.41				
10:30	START HIGH LEVEL TEST	1		42				221	.	.0388		
10:47	HIGH LEVEL	2	41.2	42	.965	.900	-.065	223	+2	+.038	-.143	
12:00		3	41.1	42	.900	.850	-.050	NIL	NIL	NIL	-.050	
11:15		4	41.5	42	.850	.810	-.040	NIL	NIL	NIL	-.040	
11:30		5	41.5	42	.810	.770	-.040	NIL	NIL	NIL	-.040	
11:45		6	41.6	42	.770	.750	-.020	224	+1	+.039	-.059	
12:00		7	41.6	42	.750	.720	-.020	NIL	NIL	NIL	-.020	
12:15		8	41.6	42	.730	.710	-.020	NIL	NIL	NIL	-.020	
	START LOW LEVEL TEST			12								
17:20	LOW LEVEL	1	12.5	12	.145	.195	+.050	NIL	NIL	NIL	+.050	
17:35		2	13.0	12	.145	.195	NIL	NIL	NIL	NIL	+.000	+.000
17:50		3	13.0	12	.195	.195	NIL	NIL	NIL	NIL	+.000	+.000
18:05		4	13.1	12	.195	.200	+.005	NIL	NIL	NIL	+.005	+.005
18:20		5	13.0	12	.200	.200	NIL	NIL	NIL	NIL	+.000	+.005
18:35		6	13.0	12	.200	.200	NIL	NIL	NIL	NIL	+.000	+.005
18:50		7	13.0	12	.200	.200	NIL	225	+1	+.039	-.039	-.034
19:05		8	13.0	12	.200	.200	NIL	NIL	NIL	NIL	NIL	-.034
19:20		9	13.0	12	.200	.200	NIL	NIL	NIL	NIL	+.000	-.034
19:35		10	13.0	12	.200	.200	NIL	NIL	NIL	NIL	+.000	-.034
19:50		11	13.0	12	.200	.200	NIL	NIL	NIL	NIL	+.000	-.034
20:05		12	13.0	12	.200	.205	+.005	NIL	NIL	NIL	+.005	-.029
20:20		13	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
20:35		14	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
20:50		15	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
21:05		16	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
18:40		17	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
17:45		18	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
17:50		19	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
17:55		20	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
14:00		21	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
14:05		22	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
14:10		23	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
14:15		24	13.0	12	.205	.205	NIL	NIL	NIL	NIL	+.000	-.029
										-.025	1.2 =	-.015

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test: .205 gph

Signature of Tester: [signature]

Date: 7-2-90

2. Statement:

☒ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☐ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Health Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator: _____

Date: _____

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER — Name: SAFETY KLEEN 484 MARKET ST., OAKLAND; Address; Name; Address; Telephone
2. OPERATOR — Name: Address; Telephone
3. REASON FOR TEST — Annual compliance with State underground storage ARTICLE
4. WHO REQUESTED TEST AND WHEN — Name; Title; Company or Affiliation; Date; Address; Telephone

5. TANK INVOLVED	Capacity	Brand/Supplier	Grade	Approx. Age	Status/Condition
EAST	12000	N/A	UNLEAD	NEW	GOOD

6. INSTALLATION DATA	Date	Material	Status	Piping
Location: SOUTH SIDE MUDG		Concrete	2 11	N/A

7. UNDERGROUND WATER — Depth to the lowest water: N/A; Is the water over the tank? ☐ Yes ☐ No; Tanks to be filled: No.; Date; Assigned by; Name; Telephone; Gross product in "tag-off" and sun tank tester. How and who is product? Consider H/O Land; Drained or otherwise opened for service or inquiry; Company; Name; Telephone

8. FILL-UP ARRANGEMENTS

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS — Additional information on any items above. Obtain or advise to be added when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS — Tanks were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Type	Leakage Indicated	Date Tested
EAST	TIGHT	- 0.1 G	7-7-90

12. SENSOR CERTIFICATION — 10/8/90; Serial No. of Monitor: #2917

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Technician: T. TIMMERMAN Service Co. Rep. Signature; Certification #: 1066; Service

TIMMERMAN ENGINEERING CONSTRUCTION
P.O. BOX 4479
WALNUT CREEK, CA 94596

PHMRT

14. SAFETY KLEEN 484 MARKET ST. — Name of Supplier, Owner or Owner — Address (No. and Street) — OAKLAND — City — CA — State — 7-7-90 — Date of Test

15. TANK TO TEST: EAST #2 (Identify by position); WATER (Brand and Grade)

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY: Nominal Capacity 12,000 Gallons; By tank strapping, capacity chart numbers 11895 Gallons. From: ☐ Station Chart ☐ Tank Manufacturer's Chart ☐ Company Engineering Data ☐ Charts supplied with ☐ Other

17. FILL-UP FOR TEST

	Gallons	Total Gallons on Hand
Bare Water Sensors: Initial Fill to ___ in.		
to 6"		
95 in. Tank Diameter		11,895
Inventory		
TOPOFF		5
		11900

Transfer above as line 25a

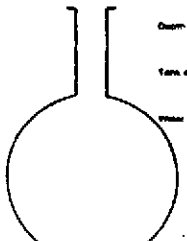
18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK ☐ Water in tank. ☐ Line(s) being tested with LVLLT. ☐ Single water table in tank observation.

Use manufacturer's applicable. Check below and record pressures in (fig. #7).

Use maximum allowable test pressure for all tests. Four pound rule does not apply to double-walled tanks.

Complete each item below:

1. Is four pound rule required? Yes ☐ No ☐
2. Height to 12" mark from bottom of tank ___ in.
3. Pressure at bottom of tank ___ P.S.I.
4. Pressure at top of tank ___ P.S.I.



Datum at bottom ___ in.
Tank dia. ___ in.
Water data ___ in.

NOTES: DOUBLE WALLED

The above calculations are to be used for any test conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to NFPA 30, Sections 2-32.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to grade* 115 in.
Add 30" for "T" grade only 30 in.
Total tubing to assemble — approximate 175 in.

20. EXTENSION HOSE SETTING
Tank dip to grade* 54 in.
Extend hose on outside tube 6" or more ---
Hose vent dip ___ in.
*If the pipe extends above grade, use top of fill

22. Thermal-Sensor reading after circulation 13707 digits; 63.67 °F Sensor
23. Digits per °F in range of expansion chamber 324 digits

COEFFICIENT OF EXPANSION (Complete after circulation)
24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity
Hydrometer employed °F
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F. From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☐ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD
Type of Product
Hydrometer Employed °F
Temperature in Tank After Circulation °F
Temperature of Sample °F
Difference (+/-) °F
Observed A.P.I. Gravity
Reciprocal Page # ___
11900 Total quantity in full tank (line 19) × Reciprocal = Volume change in this tank per °F
Transfer to Line 25a

24c. FOR TESTING WITH WATER Use Tables C & D
Water Temperature after Circulation Table C 62.6 °F
Coefficient of Water Table D 0.000005666
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b

25. (a) 11900 Total quantity in full tank (19 or 17) × (b) 0.000005666 Coefficient of expansion for involved product = (c) 11.502254 gallons Volume change in this tank per °F

26. (a) 11.502254 Volume change per °F (25 or 24c) ÷ 324 Digits per °F in tank Range (23) = 0.035506 Volume change per digit Compute to 4 decimal places. Tank test factor .0355

LOG OF TEST PROCEDURES			CONTROL		RECORD TO 001 CAL			USE FACTOR (s)			EACH READING	CHANGE
28. DATE / TIME (24 hr.)	Record details of setting up and running test (Use full length of line if needed.)	29. Reading	30. Stabilized Level at Start: Beginning of Reading	31. Level to which Restored	32. Product as Delivered: Before Reading	32. Product as Delivered: After Reading	33. Product Recovered (+) Product Removed (-)	35. Thermal Sensor Reading	36.	37. Compensation (c) = (a) + Expansion - Correction -	Temperature Adjustment: Mulberry Minutes Expansion (+) or Contraction (-) (35)(36) − (37)(1)	At Low Level compare Change per Hour (NFPA only)
07:20	ARRIVED JOB SITE											
	SET UP TEST EQUIPMENT											
09:20	START RECIRCULATION							13				
10:30	START HIGH LEVEL TEST	1		612				207		.0355		
10:45	HIGH LEVEL	2	40.5	612	.635	.650	-.165	NIL	NIL	NIL	-.185	
11:00		3	41.0	612	.450	.350	-.100	NIL	NIL	NIL	-.100	
11:15		4	41.2	612	.350	.275	-.075	NIL	NIL	NIL	-.075	
11:30		5	41.1	612	.550	.870	-.080	NIL	NIL	NIL	-.080	
11:45		6	41.5	612	.870	.820	-.050	NIL	NIL	NIL	-.050	
12:00		7	41.5	612	.820	.400	-.020	NIL	NIL	NIL	-.020	
12:15		8	41.9	612	.400	.360	-.040	305	+1	+.036	-.046	
	START LOW LEVEL TEST			12								
12:20	LOW LEVEL	1	13.3	12	.100	.385	+.185	NIL	NIL	NIL	+.185	
12:25		2	12.0	12	.285	.285	NIL	NIL	NIL	NIL	+.000	+.000
12:30		3	12.0	12	.285	.285	NIL	NIL	NIL	NIL	+.000	+.000
12:35		4	12.0	12	.285	.285	NIL	305	+1	+.036	-.036	-.036
12:40		5	12.0	12	.285	.285	NIL	NIL	NIL	NIL	+.000	-.036
12:45		6	12.1	12	.285	.295	+.010	NIL	NIL	NIL	+.010	-.026
12:50		7	12.0	12	.295	.295	NIL	NIL	NIL	NIL	NIL	-.026
12:55		8	12.0	12	.295	.295	NIL	NIL	NIL	NIL	+.000	-.026
13:00		9	12.0	12	.295	.295	NIL	NIL	NIL	NIL	+.000	-.026
13:05		10	12.0	12	.295	.295	NIL	NIL	NIL	NIL	+.000	-.026
13:10		11	12.0	12	.295	.295	NIL	NIL	NIL	NIL	+.000	-.026
13:15		12	12.0	12	.295	.305	+.010	310	+1	+.036	-.026	-.052
13:20		13	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
13:25		14	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
13:30		15	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
13:40		17	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
13:47		18	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
13:50		19	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
13:55		20	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
14:00		21	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
14:25		22	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
14:10		23	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
14:15		24	12.0	12	.305	.305	NIL	NIL	NIL	NIL	+.000	-.052
										-.052	÷ 2 =	-.026

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test .026 gph

Signature of Tester: [signature]

Date: 7-7-90

2. Statement:

☑ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a test.

OR

☐ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of the system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of the system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator: _____

Date: _____

APPENDIX M
WASTE-OIL TANK REMOVAL REPORT

FILE

safety-kleen ®

October 1, 1993

Mr. Steven Ritchie
Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Re: **Submittal of the Quarterly Groundwater Monitoring and Soil Vapor Extraction Report for the Safety-Kleen Oakland Service Center in Oakland, California.**

Dear Mr. Ritchie:

Enclosed is the quarterly report which summarizes the groundwater monitoring and vapor extraction activities conducted at the Safety-Kleen Oakland Service Center during the period from June through August 1993. Also included is information regarding the product recovery system installed in January 1993.

If you have any questions, please call me at 310/546-2082.

Sincerely,

Gary Hoch
for Anne Lunt
Senior Project Manager - Remediation
Safety-Kleen Corporation

cc: Ms. Jane Spetalnick, Safety-Kleen Corporation
Mr. Gary Long, Safety-Kleen Corporation
Mr. Ray Orlando, Safety-Kleen Corporation
Mr. Alfred Wong, State of California Department of Health Services
Ms. Jennifer Eberle, Alameda County Department of Environmental Services
Mr. Scott Comiso, BAAQMD
Mr. Greg Hoehn, *SEACOR®*

SKOAKL02.L07
10/01/93
Job No. 70005-009-02

777 BIG TIMBER ROAD ELGIN, ILLINOIS 60123 PHONE 708/697-8460 FAX 708/697-4295

FILE

safety-kleen®

October 1, 1993

Ms. Jennifer Eberle
Alameda County
Health Care Services Agency
UST Local Oversight Program
80 Swan Way, Room 200
Oakland, California 94621

Re: **Submittal of the Quarterly Groundwater Monitoring and Soil Vapor Extraction Report for the Safety-Kleen Oakland Service Center in Oakland, California.**

Dear Mr. Ritchie:

Enclosed is the quarterly report which summarizes the groundwater monitoring and vapor extraction activities conducted at the Safety-Kleen Oakland Service Center during the period from June through August 1993. Also included is information regarding the product recovery system installed in January 1993.

If you have any questions, please call me at 310/546-2082.

Sincerely,

Greg Hoehn

for Anne Lunt
Senior Project Manager - Remediation
Safety-Kleen Corporation

cc: Ms. Jane Spetalnick, Safety-Kleen Corporation
Mr. Gary Long, Safety-Kleen Corporation
Mr. Ray Orlando, Safety-Kleen Corporation
Mr. Alfred Wong, State of California Department of Health Services
Mr. Steven Ritchie, California Regional Water Quality Control Board
Mr. Scott Comiso, BAAQMD
Mr. Greg Hoehn, *SEACOR®*

SKOAKL02.L08
10/01/93
Job No. 70005-009-02

777 BIG TIMBER ROAD ELGIN, ILLINOIS 60123 PHONE 708/697-8460 FAX 708/697-4295

FILE

SEACOR
Science & Engineering Analysis Corporation

QUARTERLY GROUNDWATER MONITORING AND SOIL VAPOR EXTRACTION REPORT

400 MARKET STREET
OAKLAND, CALIFORNIA

Job No. 70005-009-02

Submitted by:
Science & Engineering Analysis Corporation

for
Ms. Anne Lunt
Safety-Kleen Corp.
P.O. Box 1429
San Pedro, California 90733

October 1, 1993

Prepared by:

Greg D. Hoehn
Principal Geologist

Reviewed by:

Paul D. Horton, R.G.
Principal Hydrogeologist

REGISTERED GEOLOGIST
PAUL D. HORTON
Exp. 6/94
No. 5435
STATE OF CALIFORNIA

1390 Willow Pass Road, Suite 360, Concord, CA 94520 (510) 686-9780 Ph (510) 686-3099 Fax

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FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

This report presents the results of groundwater monitoring and sampling activities conducted for the quarter of June through August 1993 at the Safety-Kleen Service Center located at 400 Market Street in Oakland, California (Figure 1 and Figure 2). Also included is a description of the soil vapor extraction (SVE) system and the results of the first three months of SVE system operation.

2.0 PROJECT BACKGROUND INFORMATION

The Safety-Kleen Oakland Service Center is a local distribution center for Safety-Kleen products. Three single-walled underground storage tanks (USTs) were removed and replaced with two new 12,000 gallon double-walled tanks in June and July of 1990. Clean and spent mineral spirits are currently stored in the two double-walled USTs at the site. One UST is used to temporarily store spent mineral spirits prior to shipment to Safety-Kleen's recycling center in Reedley, California and one UST is used to store clean mineral spirits for distribution to Safety-Kleen customers.

During the single-walled tank removal, mineral spirits impacted soil was excavated from the tank pit as allowable by site conditions. Additionally, a product recovery well and a vapor extraction system withdrawal network were installed in the tank pit area. Tank removal and excavation activities are documented in the "Report of Underground Storage Tank Replacement Activities" dated September 1990. A system to extract and treat soil vapor began full-scale operation on June 1, 1993. The product recovery system installed in recovery well (RW-1) has not removed separate-phase product from the water table this quarter due to a lack of product accumulation in RW-1 and recently as a result of product pump failure.

3.0 SCOPE OF WORK

Work conducted during this quarter consisted of the initiation of SVE and vapor treatment system operation, and the monitoring and sampling of groundwater monitor wells. The following sections provide a description of the SVE system and detail the work steps conducted.

3.1 SOIL VAPOR EXTRACTION SYSTEM

The SVE system began full-scale operation on June 1, 1993. The SVE consists of seven horizontal vapor extraction lines and a vapor treatment system consisting of a Padre™ adsorption system manufactured by Purus, Inc. followed by a granular activated carbon (GAC) polish. Vapors are extracted by a 10 horsepower regenerative blower. Figure 3 depicts the layout of the vapor extraction lines and the vapor treatment system. Prior to June 30, 1993, the SVE system startup and operation was conducted in accordance with the Bay Area Air Quality Management District (BAAQMD) Authority to Construct Permit dated March 4, 1993. System operation since June 30, 1993 has been conducted in accordance with the Permit to Operate dated June 30, 1993.

The vapor extraction lines are 20-foot lengths of 4-inch diameter slotted polyvinylchloride (PVC) pipe manifolded to the treatment compound via 2-inch diameter blank PVC pipe. The piping is placed at a depth of approximately 6-feet below surface grade in the tank backfill, and in the case of SV-1, in a trench 5-feet deep. The piping is covered with gravel, polyethylene film, and geotextile material. The polyethylene film is placed to direct the vacuum created by the regenerative blower away from the tank backfill to native soil which contains residual mineral spirits and associated compounds.

Extracted vapors are drawn through a water knock-out drum and through the Padre™ system. The vapor treatment portion of the Padre™ system consists of two beds that contain polymer adsorption material. The process involves one bed being on-line treating influent air, while the other bed is undergoing a desorption cycle. The beds are automatically switched back and forth between adsorption and desorption cycles at a programmed interval to optimize system efficiency based on the site conditions. While a bed is in the adsorption mode, organic compounds are adsorbed on the polymer bed and the treated vapor stream is then polished through two parallel piped 200 pound granular activated carbon canisters, prior to being vented to the atmosphere. When an adsorption bed approaches capacity, the vapor stream is diverted to the other adsorbent bed and the first bed begins a desorption cycle. The desorption cycle uses a combination of temperature, pressure, and a carrier gas (nitrogen) to remove organic compounds trapped in the adsorbent material, condense the organics, and then transfer as a liquid to a product recovery tank. The recovered product is periodically transferred to the on-site waste mineral spirits UST to be incorporated in the Safety-Kleen recycling process.

The SVE system was monitored daily from full-scale system startup on June 1, 1993 until weekly monitoring began on July 23, 1993. During each monitoring event, system influent, system effluent and each individual vapor extraction line were monitored with a flame-ionization detector (FID) or a photo-ionization detector (PID) to record system operating data and to document compliance with emission standards specified in the BAAQMD Permits.

Vapor samples were collected on June 10, June 23 and August 11, 1993 from the system influent and from the effluent of the Padre™ system to provide analytical data to calculate mineral spirits removal data. All samples were collected in Tedlar bags and transported under chain-of-custody to GTEL Environmental Laboratories, Inc. in Concord, California for analysis. The samples collected on June 10, 1993 were analyzed for total petroleum hydrocarbons as mineral spirits (TPHms) by modified U.S. Environmental Protection Agency (EPA) Method 8015. The samples collected on June 23 and August 11, 1993 were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8020, TPHms by modified EPA Method 8015, and purgeable halocarbons by EPA Method 8010.

3.2 RW-1 MINERAL SPIRITS RECOVERY

The mineral spirits recovery skimming pump began operation on January 19, 1993. Recovered mineral spirits from recovery well RW-1 (Figure 2) is pumped directly to the waste mineral spirits tank operated at the site and is incorporated into the Safety-Kleen recycling process.

3.3 GROUNDWATER MONITORING AND SAMPLING

On July 29, 1993, all on and off site monitor wells (12 total) were monitored for depth-to-water using a water level indicator calibrated to 0.01-foot (Figure 2). The depth-to-water measurements were used with well survey data to construct a potentiometric surface map.

Prior to using any equipment in a groundwater monitor well, the equipment was decontaminated by double-washing with a laboratory grade detergent in clean water, and triple-rinsed using deionized water. Purge water and decontamination water generated during well purging was placed in Safety-Kleen supplied drums pending proper disposal.

On July 29 and 30, 1993, the monitor wells were purged by hand bailing (except well MW-13 which is sampled on an annual basis and well MW-9 which contains floating mineral spirits) until the measurements of pH, temperature, and conductivity had stabilized and/or three well volumes of groundwater had been removed. Following recovery of the groundwater levels in the wells, groundwater samples were collected using disposable bailers. The groundwater samples were placed into laboratory supplied sample containers. Field data sheets which include depth-to-water measurements and well purge data are included in Appendix A.

The groundwater samples were labeled, placed on ice, and delivered to a state-certified laboratory for analysis under chain-of-custody documentation. The groundwater samples were analyzed for the presence of BTEX by EPA Method 8020, for TPHms by modified EPA Method 8015 and for purgeable halocarbons by EPA Method 601.

4.0 RESULTS

4.1 SOIL VAPOR EXTRACTION SYSTEM

The results of system daily and weekly monitoring conducted through August 24, 1993 are summarized on Table 1 and Table 2. Table 1 presents data on the system flow rate and FID or PID measurements from the Padre™ system influent, effluent and stack effluent. The results of monitoring from the stack effluent document the system operated within the BAAQMD permit requirements of a maximum emission reading of 10 parts per million by volume (ppmv), based on FID or PID readings. Table 2 presents flow rate and vapor stream FID or PID data from the seven individual vapor extraction lines.

The TPHms analyses on system influent samples detected 320 $\mu g/\ell$ on June 10, 400 $\mu g/\ell$ on June 23 and 570 $\mu g/\ell$ on August 11, 1993. Results of Padre™ effluent analyses (collected to determine Padre™ system efficiency) for the same dates were 30 $\mu g/\ell$, < 10 $\mu g/\ell$ and 34 $\mu g/\ell$, respectively. The Padre™ effluent samples were collected from the vapor stream prior to the granular activated carbon filter and are not indicative of emissions from the effluent stack. Effluent stack data were recorded with an FID or a PID in accordance with BAAQMD Permits. Results of BTEX and purgeable halocarbon analyses on system influent samples were 1 $\mu g/\ell$ ethylbenzene, 2 $\mu g/\ell$ xylenes, and 1 $\mu g/\ell$ 1,1,1-trichloroethane (TCA) on June 23 and 0.9 $\mu g/\ell$ benzene, 2 $\mu g/\ell$ toluene, 20 $\mu g/\ell$ xylenes, and 0.6 $\mu g/\ell$ 1,1,1-TCA on August 11, 1993. No BTEX or purgeable halocarbon compounds were detected in Padre® effluent samples collected on June 23 or August 11, 1993. Copies of vapor analytical reports are included as Appendix B.

The system monitoring data were used to calculate system mineral spirits removal rates and a cumulative mass of mineral spirits removed via vapor extraction. As shown on Table 3, analytical data collected through August 11, 1993 indicate 351.1 pounds of mineral spirits have been removed. Approximately 129.5 gallons of liquid have been removed by the Padre™ system and incorporated into the Safety-Kleen recycling process through August 19, 1993 (Table 4). Based on vapor stream analytical data versus liquid hydrocarbon recovery mass balance calculations, it appears that approximately 58% of the liquid recovered is water and 42% mineral spirits.

4.2 RW-1 MINERAL SPIRITS RECOVERY

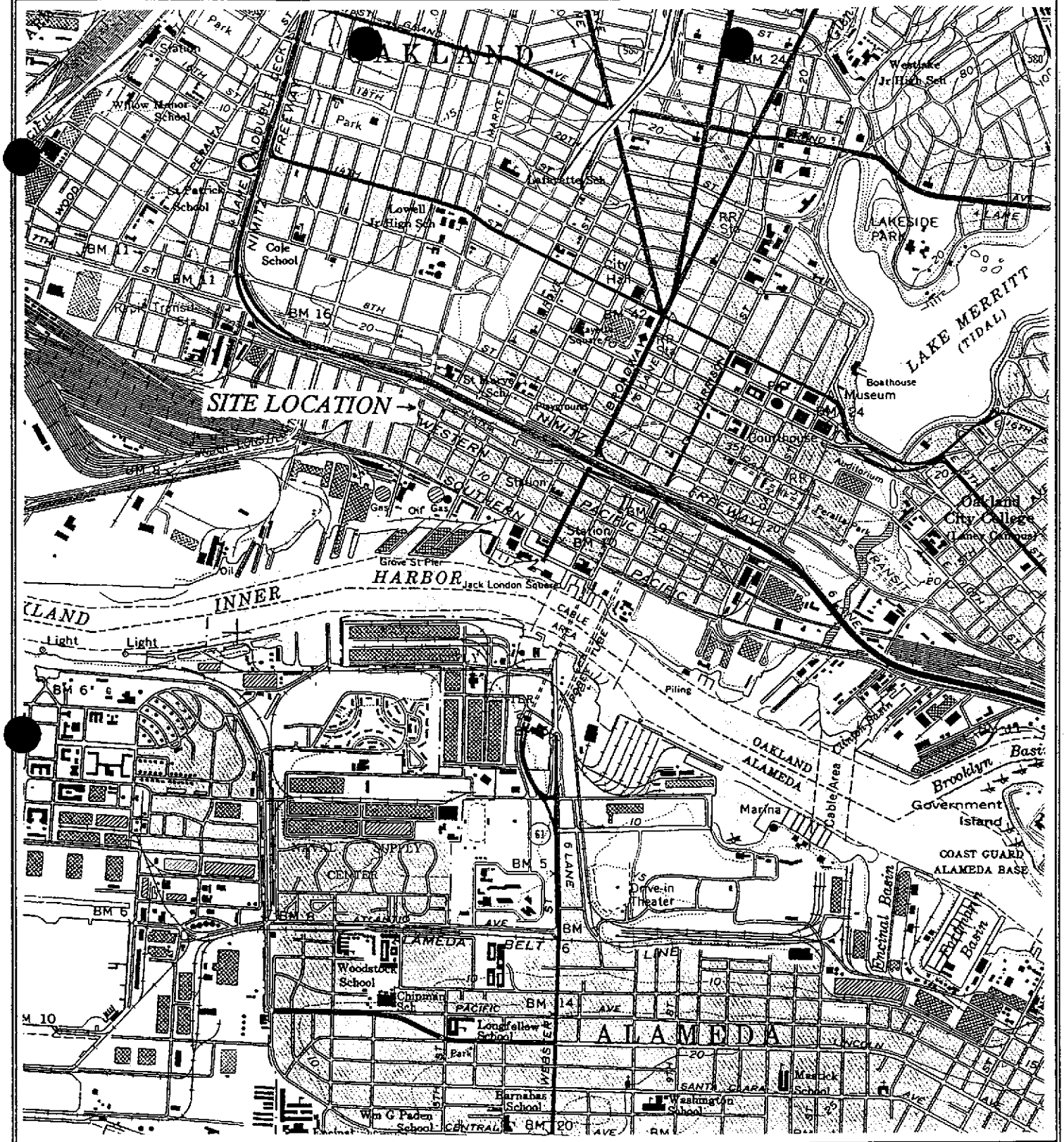
The mineral spirits recovery skimming pump has not removed floating mineral spirits since May 20, 1993. Recovery has been hindered due to a lack of mineral spirits accumulation in recovery well RW-1 and recently as a result of a pump breakdown. A total of 10.8 gallons of product have been removed since the pump was installed on January 19, 1993. Product recovery data are presented on Table 5.

4.3 GROUNDWATER ELEVATIONS

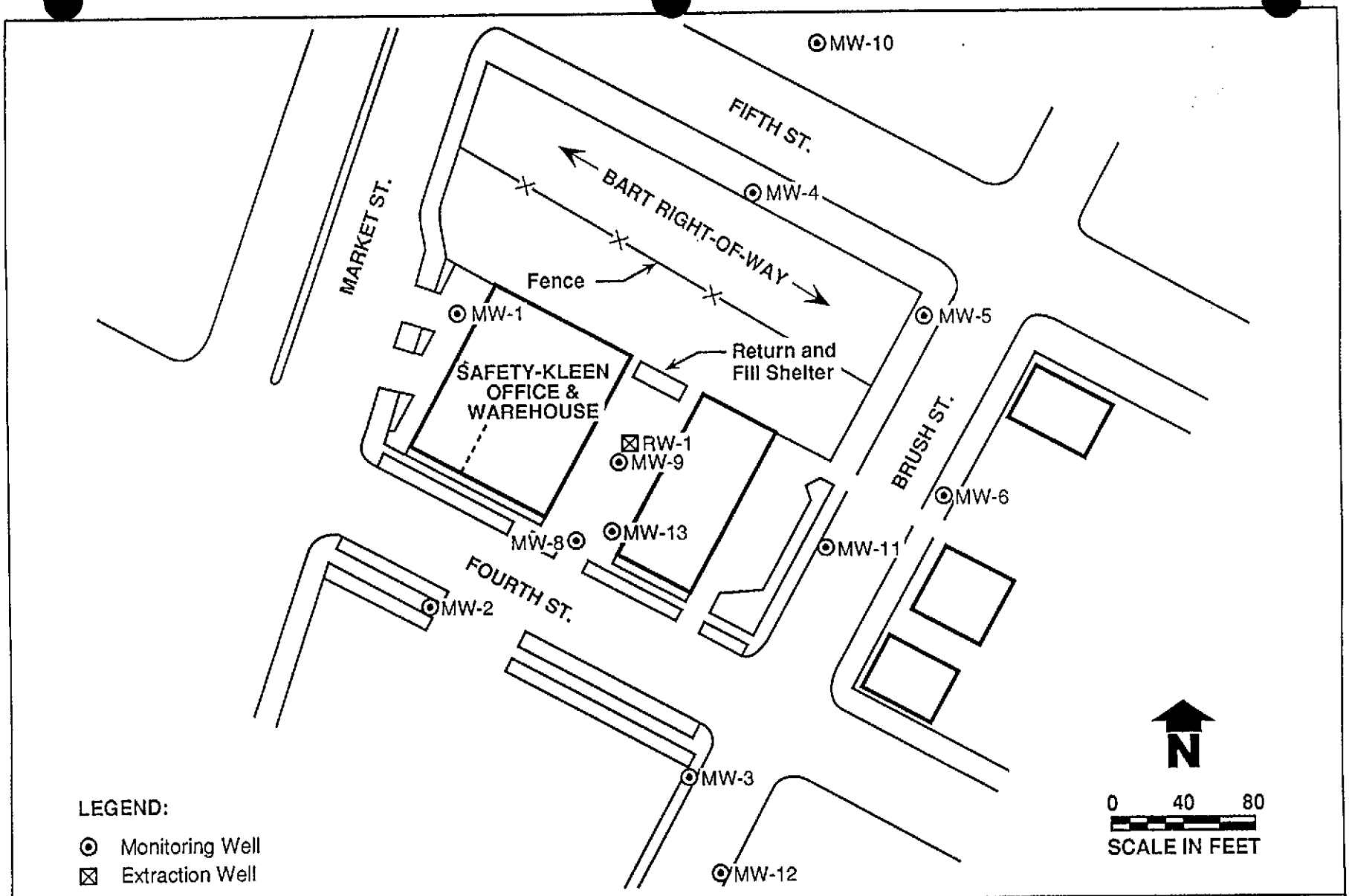
Groundwater elevations and depth-to-water readings as measured on July 29, 1993 are presented in Table 6. The average water table elevation at the site decreased by 0.77-feet since the April 20, 1993 monitoring and sampling event. A potentiometric surface map is presented as Figure 4. The groundwater flow direction remains to the south, consistent with historic site data. The hydraulic gradient is an average of 0.003 feet/foot across the site. This gradient is consistent with the previous quarter's data and is typical for the site.

4.4 GROUNDWATER CONDITIONS

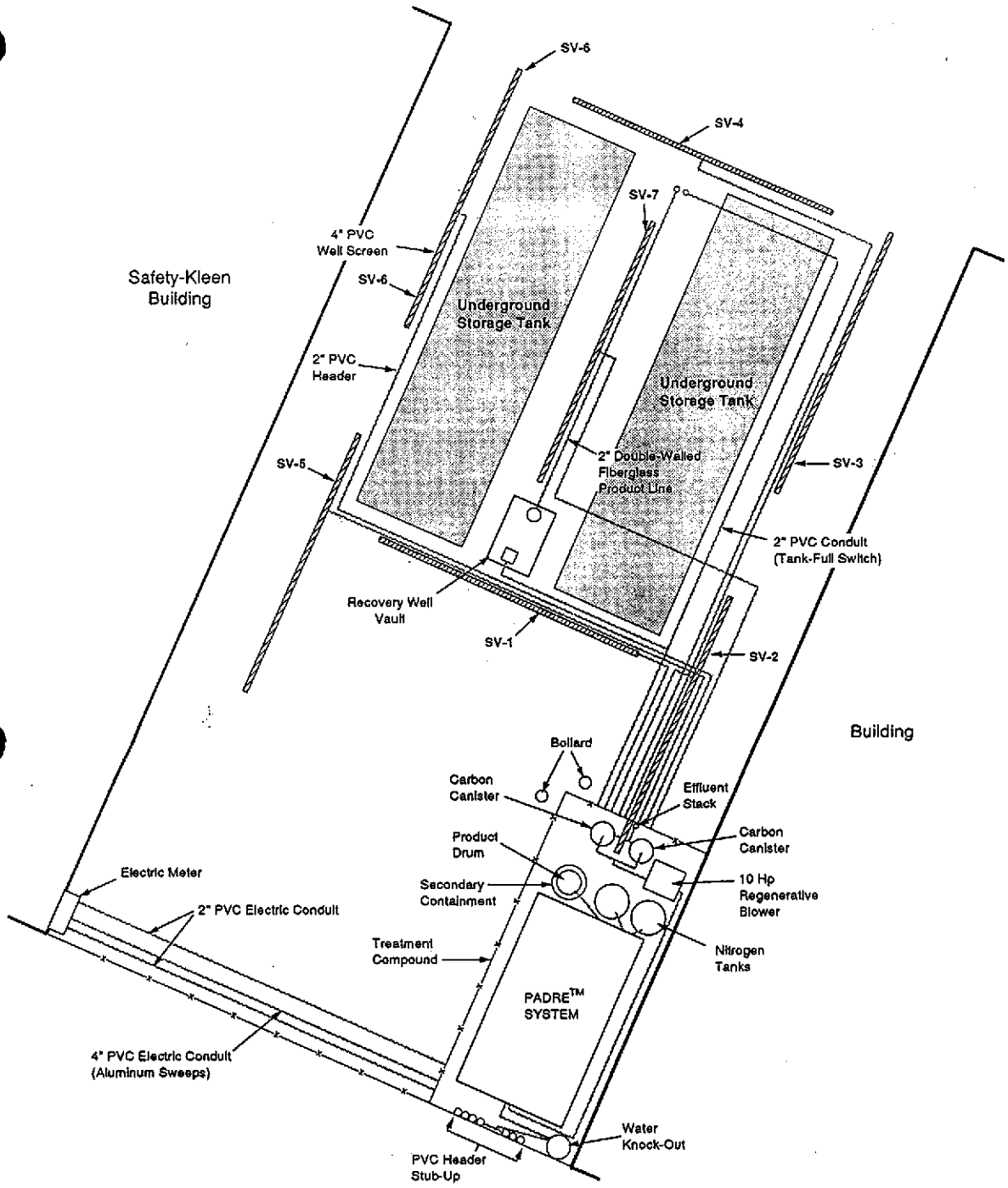
No concentrations of BTEX or TPHms were detected above the laboratory detection limits in any of the ten groundwater samples collected on August 29 and 30, 1993. Volatile organic compounds (VOCs) were detected in groundwater samples from seven wells (MW-4, MW-5, MW-6, MW-8, MW-10, MW-11 and MW-12). VOCs detected during this sampling event consisted of 1,1-dichloroethene (DCE), 1,1-dichloroethane (DCA), 1,2-DCA, trichloroethene (TCE), chloroform, 1,2-DCE, 1,1,1-trichloroethane (TCA) and trichlorofluoromethane. Historic data indicate an upgradient TCE plume exists and has been detected in monitor wells MW-4 and MW-10. Analytical test results of the compounds detected this sampling event are summarized in Table 7. Laboratory analytical reports are included in Appendix C. Analytical test results of the compounds detected since the April 27, 1992 sampling event are summarized in Table 8.



DRAFTED BY:	CHECKED BY:			
TS	GDH	PROJECT NO. 70005-009-02	FIGURE 1	*SEACOR* 1390 Willow Pass Road Suite 360 Concord, CA 94520
DWG. DATE:	REV. DATE:	Safety-Kleen Corporation 400 Market Street Oakland, California	Site Location Map	
12/14/92	12/14/92			
FILE NAME:				
OAKLAND2.F01				



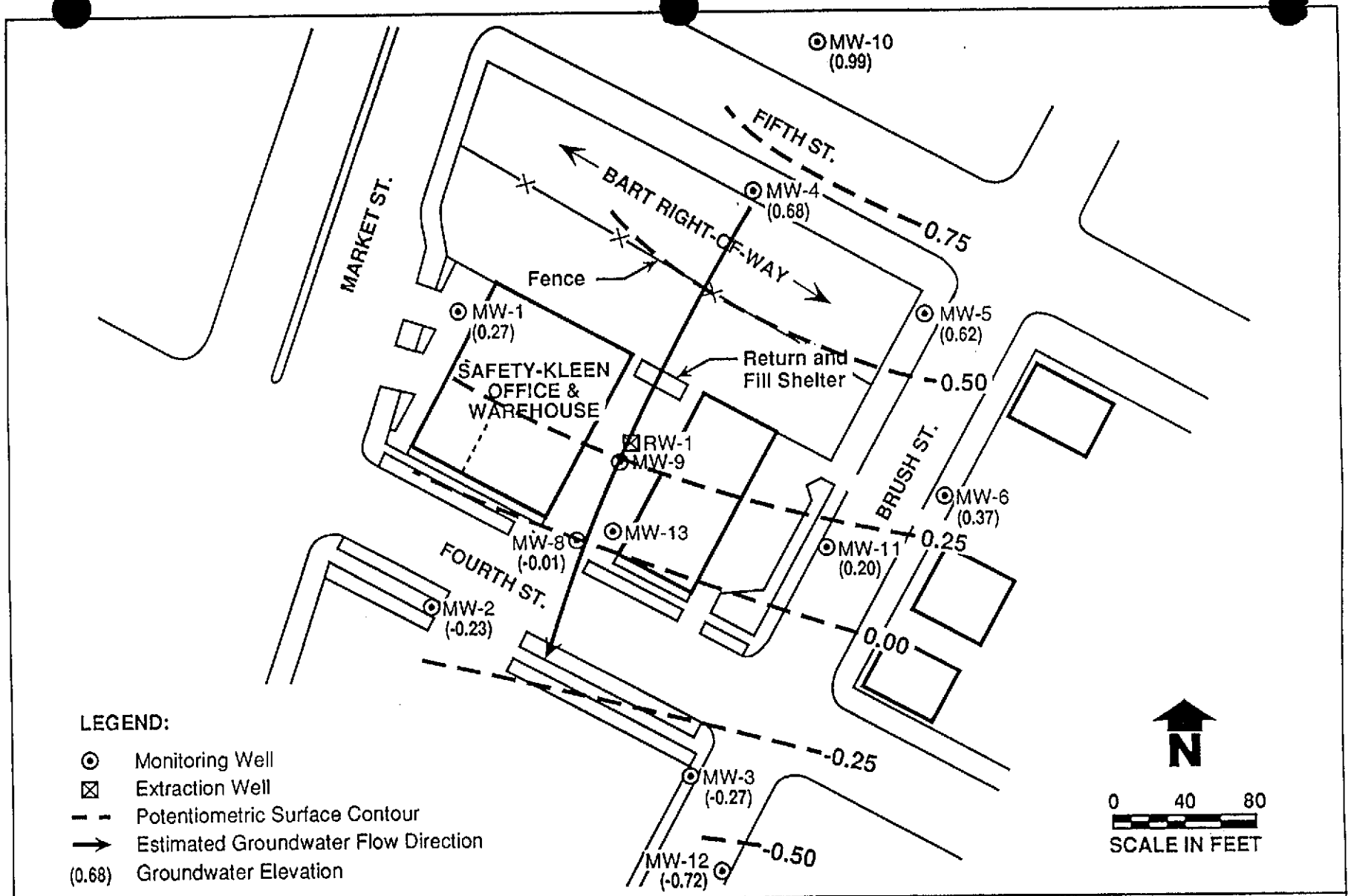
DRAFTED BY: LC	CHECKED BY: GH	PROJECT NO. 70005-009	FIGURE 2	SEACOR 1390 Willow Pass Rd. Suite 360 Concord, CA 94520
DWG. DATE: 1/14/93	REV. DATE: 1/18/93	SAFETY-KLEEN CORPORATION OAKLAND, CALIFORNIA	SITE PLAN	
FILE NAME: S/SK-OKLND/02				



N

0 10 Feet

DRAFTED BY: DH	CHECKED BY:	PROJECT NO. 70005-009	FIGURE 3	*SEACOR* 1390 Willow Pass Road Suite 360 Concord, CA 94520
DRWG. DATE:	REV. DATE:	Safety-Kleen Service Center 400 Market Street Oakland, California	Soil Vapor Extraction System Layout	
FILE NAME:				



DRAFTED BY: LC	CHECKED BY: GH	PROJECT NO. 70005-009	FIGURE 4	SEACOR 1390 Willow Pass Rd. Suite 360 Concord, CA 94520
DWG. DATE: 8/16/93	REV. DATE: 8/18/93	SAFETY-KLEEN CORPORATION OAKLAND, CALIFORNIA	POTENTIOMETRIC SURFACE MAP 7-29-93	
FILE NAME: S/SK-OKLND/05				

Table 1
Vapor Extraction System Monitoring Data

Date	Extraction Vacuum in. H20	Extraction Flowrate scfm	KO Vacuum in. H20(1)	Padre Influent (ppmv)	Padre Effluent (ppmv)	Stack Effluent (ppmv)	Sampler	Notes
05-27-93	2	114	22	40	4	0	GGA	24 hours run from 05/27-28
06-01-93	2.3	122	16	450	3	0.5	GGA	
06-02-93	3.25	123	16	200	1.5	3	GGA	
06-03-93	10	114	22	70	4	1.1	GGA	
06-04-93	10.5	114	22.5	80	2.5	1.5	RAR	Shut down for weekend
06-07-93	12	113	34	120	1	0.5	GGA	
06-08-93	10	117	22	300	1.5	0	GGA	
06-09-93	7	117	20	375	29	2	NAB	
06-10-93	8	117	22	400	6	0	NAB	
06-11-93	8	118	18	320	8	0	NAB	Shut down for weekend
06-14-93	8.5	118	18	250	11.75	3	NAB	
06-15-93	7	118	19	250	0.75	1	NAB	
06-16-93	7	117	18	200	0	0	NAB	
06-17-93	7	117	18	200	0	0	NAB	
06-18-93	6	118	19	300	10	8.5	NAB	Shut down for weekend
06-21-93	5.5	117	18	250	0	0.75	NAB	
06-22-93	5.5	117	18	290	0.5	0	NAB	
06-23-93	5	118	18	210	0	0	NAB	
06-24-93	5	118	18	200	0	0	NAB	Shut down on 6/25 and weekend
06-28-93	5	120	18	190	0	0	NAB	38.8 gallons removed on 6/25
06-29-93	4.5	117	18	150	0	0	NAB	
06-30-93	4	117	18	150	0	0	NAB	
07-07-93	4	117	18	250	0.5	0	NAB	
07-08-93	4	117	18	200	0	0.5	NAB	
07-09-93	5	120	18	200	0	0	NAB	Shut down for weekend
07-12-93	5	120	18	190	0	0	NAB	
07-13-93	5	118	18	160	0	1	NAB	Weekly monitoring to begin on 7/23
07-23-93	6	118	20	230	9	1	GGA	55.2 gallons removed on 7/23 (94.0 total)
07-27-93	6	120	19	300	3	3	NAB	
08-05-93	5.75	117	20	350	1.5	1	NAB	
08-11-93	5.8	118	24	125	6.4	7.6	RPR	Began monitoring with PID
08-20-93	6	118	24	113	12.6	9.3	RPR	35.5 gallons removed on 8/19 (129.5 total)
08-24-93	5.75	117	24	128	6	7.3	RPR	

(1) Knockout Pot Effluent Vacuum.

Table 2
Soil Vent Line Monitoring Data

Date	SV-1 (fpm)	SV-1 (ppmv)	SV-2 (fpm)	SV-2 (ppmv)	SV-3 (fpm)	SV-3 (ppmv)	SV-4 (fpm)	SV-4 (ppmv)	SV-5 (fpm)	SV-5 (ppmv)	SV-6 (fpm)	SV-6 (ppmv)	SV-7 (fpm)	SV-7 (ppmv)
05-27-93	600	400	1200	500	1750	500	1300	400	1550	530	1600	480	1500	380
06-01-93	600	400	1400	450	1920	500	1450	400	1700	500	1800	500	1600	410
06-02-93	900	300	1950	310	2000	200	2000	300	1700	200	2000	200	2000	225
06-03-93	1800	120	2000	150	2000	140	1950	150	2000	110	1700	110	2000	100
06-04-93	1200	100	2000	90	1900	110	2000	125	2000	65	2000	60	2000	60
06-07-93	1300	180	2000	150	2000	120	2000	200	2000	130	2000	120	2000	120
06-08-93	500	250	2000	220	200	210	2000	400	2000	200	2000	150	1700	250
06-09-93	500	575	2000	475	1425	250	2000	450	2000	200	2000	300	1700	250
06-10-93	500	600	2000	350	1450	20	2000	350	2000	190	2000	280	2000	20
06-11-93	500	480	1800	400	1450	180	2000	270	1200	180	2000	230	2000	180
06-14-93	500	400	2000	260	1450	180	2000	320	2000	180	2000	180	2000	100
06-15-93	250	375	2000	300	2000	220	2000	300	2000	160	2000	180	2000	150
06-16-93	200	275	2000	210	2000	170	2000	250	2000	130	2000	150	2000	130
06-17-93	150	250	2000	190	2000	110	2000	210	2000	110	2000	100	2000	110
06-18-93	200	300	2000	330	2000	200	2000	300	1500	200	2000	200	1500	220
06-21-93	150	250	2000	275	2000	290	2000	260	2000	250	2000	200	1350	200
06-22-93	100	300	2000	200	2000	200	2000	290	2000	200	2000	210	2000	180
06-23-93	100	220	2000	160	200	240	2000	170	2000	280	2000	210	2000	200
06-24-93	50	210	2000	160	2000	210	2000	150	2000	210	2000	220	2000	180
06-28-93	50	200	2000	290	2000	220	2000	300	2000	210	2000	200	2000	170
06-29-93	50	160	2000	130	2000	170	2000	150	2000	170	2000	160	2000	110
06-30-93	50	140	2000	120	2000	150	2000	150	2000	150	2000	140	1900	100
07-07-93	50	280	50	190	2000	280	2000	200	2000	270	2000	230	2000	85
07-08-93	50	160	700	170	2000	210	2000	170	2000	200	1500	190	2000	80
07-09-93	50	200	700	180	2000	280	2000	170	2000	270	2000	250	2000	140
07-12-93	50	100	50	110	2000	180	2000	80	2000	180	200	170	2000	80
07-13-93	50	80	50	85	2000	150	2000	70	2000	130	1700	140	2000	50
07-23-93	500	150		110	2000	320	2000	80	2000	260	2000	230	2000	170
07-27-93	50	160	50	140	2000	280	2000	60	2000	250	2000	280	2000	150
08-05-93	50	190	2000	70	2000	320	2000	280	2000	320	2000	350	2000	220
08-11-93	50	89	50	54	2000	111	1500	33	2000	84	2000	87	2000	54
08-20-93	50	41	50	12	2000	85	1700	14	2000	115	2000	80	2000	56
08-24-93	50	72	50	43	2000	115	2000	55	2000	94	2000	87	2000	72

Table 3
Vapor Extraction System Mineral Spirits Removal Data

Date	Elapsed Time (days)	TPHms Influent ug/l	Flow (cfm)	TPHms Removed (lbs)	Removal Rate (lbs/day)
06-10-93	0	320	117	0	3.36
06-23-93	13	400	118	55.1	4.24
08-11-93	62	570	118	351.1	6.04

TABLE 4
PRODUCT RECOVERY DATA
From PADRE™ System

Date	*Product Recovered This Period (gallons)*	*Cummulative Product Recovered (gallons)*
June 25, 1993	38.8	38.8
July 23, 1993	55.2	94.0
August 19, 1993	35.5	129.5

TABLE 5
PRODUCT RECOVERY DATA
From Well RW-1

Date	*Product Recovered This Period (gallons)*	*Cummulative Product Recovered (gallons)*
01/19/93	-	-
02/25/93	6.5	6.5
05/20/93	4.3	10.8
08/27/93	-	10.8

TABLE 6
GROUNDWATER MONITORING DATA
JULY 29, 1993

Well I.D.	*TOC Elevation (ft msl)*	*DTW (ft)*	*DTP (ft)*	*PT (ft)*	*ADJ Elevation (ft msl)*
MW-1	7.99	7.72	-	-	0.27
MW-2	8.20	8.43	-	-	-0.23
MW-3	6.66	6.93	-	-	-0.27
MW-4	10.32	9.64	-	-	0.68
MW-5	10.28	9.66	-	-	0.62
MW-6	8.97	8.60	-	-	0.37
MW-8	7.80	7.81	-	-	-0.01
MW-9	8.21	* 8.89	7.49	1.40	* -0.68
MW-10	10.43	9.44	-	-	0.99
MW-11	7.91	7.71	-	-	0.20
MW-12	6.74	7.46	-	-	-0.72
MW-13	8.08	8.23	-	-	-0.15

TOC	=	Top of casing
DTW	=	Depth-to-water
DTP	=	Depth-to-product (separate-phase hydrocarbons)
PT	=	product thickness
ADJ ELEVATION	=	Adjusted groundwater elevation.
ft msl	=	Measurement in feet (ft) relative to mean sea level (msl)
*	=	Measurement is approximate due to emulsion layer between groundwater and product

TABLE 7
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
EPA METHOD 8010
JULY 29 AND 30, 1993
(Results in parts per billion)

Well I.D.	*1,1-DCE*	*1,1-DCA*	*1,2-DCA*	*Chloroform*	*TCE*	*1,2-DCE*	*1,1,1-TCA*	*TCFM*
MW-1	-	-	-	-	-	-	-	-
MW-2	-	-	-	-	-	-	-	-
MW-3	-	-	-	-	-	-	-	-
MW-4	-	-	-	-	1,100	53	-	-
MW-5	0.6	-	-	-	6.0	-	-	19
MW-6	-	-	-	-	5.0	-	-	-
MW-8	-	-	5.0	-	31	1.0	-	-
MW-10	2.0	-	-	0.5	54	17	0.8	-
MW-11	2.0	-	-	-	36	3.0	2.0	-
MW-12	-	2.0	2.0	-	30	3.0	-	-

ONLY DETECTED COMPOUNDS ARE LISTED. FOR A COMPLETE LIST OF ANALYTES SEE APPENDIX B.

-	=	Not Detected	TCE	=	trichloroethene
1,1-DCE	=	1,1-dichlorothene	1,2-DCE	=	1,2-dichloroethene
1,1-DCA	=	1,1-dichloroethane	1,1,1-TCA	=	1,1,1-trichloroethane
1,2-DCA	=	1,2-dichloroethane	TCFM	=	trichlorofluoromethane

SKOAKL02.T12
10/01/93
Job No. 70005-009-02

TABLE 8
SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
(Results in Parts Per Billion)

Compound	MW-1						MW-2					
	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/29/93	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/30/93
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	1.5	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.9	-	-	0.6	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Toluene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Ethylbenzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Xylenes	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-

- = Not Detected NA = Not Analyzed NS = Not Sampled

TABLE 3 - Continued
SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
(Results in Parts Per Billion)

Compound	MW-3						MW-4					
	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/29/93	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/29/93
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	4.8	-	2.7	2.0	-	-	-	-	-	-	-	-
1,2-Dichloroethane	2.3	1.5	1.8	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene	1.4	-	-	-	-	-	82	40	-	-	-	53
Chloroform	-	-	-	-	-	-	2.4	-	1.8	-	7.6	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	7.2	4.3	44	1.3	0.7	-	1300	520	270	5500	2400	1100
Chlorobenzene	1.8	2.0	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.5	-	-	-	-	-	-	-	-	0.5	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Toluene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Ethylbenzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Xylenes	NA	NA	NA	0.5	-	-	NA	NA	NA	-	-	-

- = Not Detected NA = Not Analyzed NS = Not Sampled

TABLE 8 - Continued
SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
(Results in Parts Per Billion)

Compound	MW-5						MW-6					
	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/29/93	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/29/93
1,1-Dichloroethene	-	-	-	-	1.5	0.6	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	0.7	-	-	-	-	-
1,1,1-Trichloroethane	1.7	0.9	-	-	-	-	-	-	-	-	-	-
Trichloroethene	10	4.6	3.7	11	4.0	6.0	1.2	-	1.5	1.8	-	5.0
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	6.5	-	-	-	18	19	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Toluene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Ethylbenzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Xylenes	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-

- = Not Detected NA = Not Analyzed NS = Not Sampled

TABLE 8 - Continued
SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
(Results in Parts Per Billion)

Compound	MW-8						MW-10					
	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/30/93	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/30/93
1,1-Dichloroethene	-	-	-	-	-	-	0.6	-	1.4	-	-	2.0
1,1-Dichloroethane	2.4	2.4	0.7	-	3.4	-	-	-	-	-	-	-
1,2-Dichloroethane	5.3	4.8	3.3	-	7.4	5.0	-	-	-	-	-	-
1,2-Dichloroethene	0.9	1.8	-	-	-	1.0	34	25	-	-	-	17
Chloroform	-	-	-	-	-	-	2.3	1.0	1.1	-	1.2	0.5
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	0.8
Trichloroethene	23	19	14	1.4	14	31	190	70	86	53	45	54
Chlorobenzene	7.2	5.7	4.5	-	11	-	-	-	-	-	-	-
1,2-Dichloropropane	0.7	-	-	-	0.6	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1.1	1.1	-	-	1.8	-	-	-	-	-	-	-
1,4-Dichlorobenzene	2.0	2.0	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	1.1	1.9	-	2.6	-	-	-	-	-	-	-
Vinyl Chloride	-	-	-	-	-	-	-	0.83	-	-	-	-
Benzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Toluene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Ethylbenzene	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-
Xylenes	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-

- = Not Detected NA = Not Analyzed NS = Not Sampled

TABLE 8 - Continued
SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
(Results in Parts Per Billion)

Compound	MW-11						MW-12					
	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/30/93	4/27/92	7/9/92	10/19/92	1/20/93	4/20/93	7/30/93
1,1-Dichloroethene	NS	-	1.9	-	-	2.0	-	-	-	-	-	-
1,1-Dichloroethane	NS	-	-	-	-	-	3.3	2.4	2.9	-	2.6	2.0
1,2-Dichloroethane	NS	-	-	-	-	-	2.2	1.3	1.5	-	-	2.0
1,2-Dichloroethene	NS	7.3	14	-	-	3.0	2.8	2.9	-	-	-	3.0
Chloroform	NS	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	NS	-	1.2	-	-	2.0	-	-	-	-	-	-
Trichloroethene	NS	50	77	47	9.1	36	41	18	4	22	17	30
Chlorobenzene	NS	-	-	-	-	-	-	-	2.0	-	-	-
1,2-Dichloropropane	NS	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	NS	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	NS	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	NS	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	NS	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	NS	-	-	-	-	-	-	-	-	-	-	-
Benzene	NS	NA	NA	-	-	-	NA	NA	NA	-	-	-
Toluene	NS	NA	NA	-	-	-	NA	NA	NA	-	-	-
Ethylbenzene	NS	NA	NA	-	-	-	NA	NA	NA	-	-	-
Xylenes	NS	NA	NA	-	-	-	NA	NA	NA	-	-	-

- = Not Detected NA = Not Analyzed NS = Not Sampled

TABLE 8 - Continued
SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
(Results in Parts Per Billion)

Compound	*MW-13*											
	4/27/92	*7/9/92*	*10/19/92*	*1/20/93*	*4/20/93*	*7/29/93*						
1,1-Dichloroethene	-	-	-	-	-	NS						
1,1-Dichloroethane	-	-	-	-	-	NS						
1,2-Dichloroethane	-	-	-	-	-	NS						
1,2-Dichloroethene	-	-	-	-	-	NS						
Chloroform	-	-	-	-	-	NS						
1,1,1-Trichloroethane	-	-	-	-	-	NS						
Trichloroethene	-	-	-	-	-	NS						
Chlorobenzene	-	-	-	-	-	NS						
1,2-Dichloropropane	-	-	-	-	-	NS						
Trichlorofluoromethane	-	-	-	-	-	NS						
Tetrachloroethene	-	-	-	-	-	NS						
1,4-Dichlorobenzene	-	-	-	-	-	NS						
1,2-Dichlorobenzene	-	-	-	-	-	NS						
Vinyl Chloride	-	-	-	-	-	NS						
Benzene	NA	NA	NA	0.5	-	NS						
Toluene	NA	NA	NA	0.4	-	NS						
Ethylbenzene	NA	NA	NA	0.3	-	NS						
Xylenes	NA	NA	NA	1	-	NS						

- = Not Detected NA = Not Analyzed NS = Not Sampled

APPENDIX A
FIELD DATA SHEETS

HYDROLOGIC DATA SHEET

DATE: 7-29-93 PROJECT: Safety-Kleen Oakland PROJECT # 20005-009-02 SK08

EVENT: Qtly Sampling SAMPLER: BB

WELL OR LOCATION	TIME	MEASUREMENT					COMMENTS
		TOC	DTW	DTP	PT	ELEV	
MW1	0925	7.99	7.72	—	—	0.27	
MW2		8.20	8.43	—	—	-0.23	
MW3		6.66	6.93	—	—	-0.27	
MW4		10.32	9.64	—	—	0.68	
MW5		10.28	9.66	—	—	0.62	
MW6		8.97	8.60	—	—	0.37	
MW8		7.80	7.81	—	—	-0.01	
MW9		8.21	8.89*	7.49	1.40	-0.68	
MW10		10.43	9.44	—	—	0.99	
MW11		7.91	7.71	—	—	0.20	
MW12	1510/7-30-93	6.74	7.46	—	—	-0.72	
MW13 (Deep)		8.08	8.23	—	—	-0.15	
RW-1	1040/7-30-93	—	6.84*	6.68	0.16		

CODES: TOC - TOP OF CASING (FEET, RELATIVE TO MEAN SEA LEVEL)
DTW - DEPTH TO WATER (FEET)
DTP - DEPTH TO PRODUCT (FEET)
PT - PRODUCT THICKNESS (FEET)
ELEV - GROUNDWATER ELEVATION (FEET, RELATIVE TO MEAN SEA LEVEL)
* - Estimated

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW1
SAMPLE ID: MW1
CLIENT NAME: SEACOR/Schnitzer
LOCATION: SK-Oakland

PROJECT NO: 20005-009
PURGED BY: BK
SAMPLED BY: BK

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	7.99	VOLUME IN CASING (gal)	2.3
DEPTH TO WATER (feet):	7.72	CALCULATED PURGE (gal)	6.8
DEPTH OF WELL (feet):	21.05	ACTUAL PURGE VOL. (gal)	7

DATE PURGED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1130
DATE SAMPLED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1550

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): none

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
____	7	7.15	918	71.9	clr	low
____	____	____	____	____	____	____
____	____	____	____	____	____	____
____	____	____	____	____	____	____
____	____	____	____	____	____	____

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
Cloudy
Yellow
Brown

ODOR: none

PURGING EQUIPMENT

____	2" Bladder Pump	____	Bailer(Teflon®)
____	Centrifugal Pump	X	Bailer (PVC)
____	Submersible Pump	____	Bailer (Stainless Steel)
____	Well Wizard™	____	Dedicated

Other: ____

SAMPLING EQUIPMENT

____	2" Bladder Pump	____	Bailer(Teflon®)
____	DDL Sampler	X	Bailer (PVC)(disposable)
____	Submersible Pump	____	Bailer (Stainless Steel)
____	Well Wizard™	____	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: ____

SIGNATURE: [signature] Page 1 of 10

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW 4
SAMPLE ID: MW 4
CLIENT NAME: Safety Kleen
LOCATION:

PROJECT NO: 70005-009
PURGED BY: BDR
SAMPLED BY: BDR

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	1032	VOLUME IN CASING (gal)	2.8
DEPTH TO WATER (feet):	9.64	CALCULATED PURGE (gal)	8.2
DEPTH OF WELL (feet):	25.80	ACTUAL PURGE VOL. (gal)	8

DATE PURGED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1158
DATE SAMPLED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1605

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): None

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	5.5	-	767	66.1	tan	mod
	7	-	752	66.1	"	"
	8	-	763	66.1	-	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

ODOR: None

Clear
Cloudy
Yellow
Brown

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC/disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: ____

SIGNATURE: ____

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW5
SAMPLE ID: MW5
CLIENT NAME: 5-K-oak
LOCATION: Oakland

PROJECT NO: 70005-009
PURGED BY: JDE
SAMPLED BY: JDE

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	10.28	VOLUME IN CASING (gal)	3.3
DEPTH TO WATER (feet):	9.66	CALCULATED PURGE (gal)	10
DEPTH OF WELL (feet):	29.20	ACTUAL PURGE VOL. (gal)	10.5/11

DATE PURGED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) ~~1615~~ 1220
DATE SAMPLED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1615

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): ____

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	5		792	66.5	Brn	mod
	8		820	66.1	"	"
	9.5		822	65.9	"	"
	11	7.04	827	65.8	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
Cloudy
Yellow
Brown

ODOR: none

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC/disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: ____

SIGNATURE: [signature] Page 3 of 10

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW6
SAMPLE ID: MW6
CLIENT NAME: Safety Kleen
LOCATION: Oakland

PROJECT NO: 72005-009
PURGED BY: BDL
SAMPLED BY: BDL

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	8.97	VOLUME IN CASING (gal.)	3.6
DEPTH TO WATER (feet):	8.60	CALCULATED PURGE (gal.)	10.7
DEPTH OF WELL (feet):	29.50	ACTUAL PURGE VOL. (gal.)	12

DATE PURGED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1330
DATE SAMPLED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1630

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): none

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	7	6.92	541	69.7	tan	mod
	9	7.35	466	68.4	"	"
	12	7.38	490	68.5	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
Cloudy
Yellow
Brown

ODOR: ____

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC) (disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: ____

SIGNATURE: ____

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW3
SAMPLE ID: MW3
CLIENT NAME: Safety Kleen
LOCATION: Oakland

PROJECT NO: 20085-009
PURGED BY: Rox
SAMPLED BY: Rox

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	6.66	VOLUME IN CASING (gal)	3.9
DEPTH TO WATER (feet):	6.93	CALCULATED PURGE (gal)	11.6
DEPTH OF WELL (feet):	29.60	ACTUAL PURGE VOL. (gal)	12.5

DATE PURGED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1520
DATE SAMPLED: 7-29-93 Start (2400 Hr) ____ End (2400 Hr.) 1605

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): none

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	8	7.50	475	71.0	Brn	mod
	10	7.35	382	70.0	"	"
	11	7.28	510	68.6	"	"
	12.5	7.70	550	68.4	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
(Cloudy)
Yellow
(Brown)

ODOR: none

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: ____

SIGNATURE: ____ Page 5 of 10

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW10
SAMPLE ID: MW10
CLIENT NAME: Safety Kleen
LOCATION: Oakland

PROJECT NO: 70005-009
PURGED BY: BK
SAMPLED BY: BK

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	1043	VOLUME IN CASING (gal)	3.4
DEPTH TO WATER (feet):	9.44	CALCULATED PURGE (gal)	10.2
DEPTH OF WELL (feet):	29.45	ACTUAL PURGE VOL. (gal)	11.5

DATE PURGED: 2-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1252
DATE SAMPLED: 2-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1600

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): none

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (mmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	9	6.57	68943	68.3	Brn	high
	10	6.75	940	66.7	"	"
	11	6.73	931	67.3	"	"
	11.5	6.71	938	67.1	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
(Cloudy)
Yellow
(Brown)

ODOR: none

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: ____

SIGNATURE: ____

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW11
SAMPLE ID: MW11
CLIENT NAME: Safety-Kleen
LOCATION: Oakland

PROJECT NO: 20006-009
PURGED BY: BDC
SAMPLED BY: BDC

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	7.91	VOLUME IN CASING (gal)	2.8
DEPTH TO WATER (feet):	7.21	CALCULATED PURGE (gal)	8.5
DEPTH OF WELL (feet):	24.35	ACTUAL PURGE VOL. (gal)	8.5

DATE PURGED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1200
DATE SAMPLED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1615

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): none

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	5	6.98	815	69.3	BRN	High
	7	7.02	835	68.6	"	"
	8.5	6.93	844	69.0	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
(Cloudy)
Yellow
(Brown)

ODOR: none

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: Roots in well

SIGNATURE: [signature]

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW2
SAMPLE ID: MW2
CLIENT NAME: Safety Kleen
LOCATION: Oakland

PROJECT NO: 20005-009
PURGED BY: BR
SAMPLED BY: BR

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	8.20	VOLUME IN CASING (gal.)	3.2
DEPTH TO WATER (feet):	8.43	CALCULATED PURGE (gal.)	9.6
DEPTH OF WELL (feet):	27.3	ACTUAL PURGE VOL. (gal.)	10

DATE PURGED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1030
DATE SAMPLED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1625

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): none

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	5	7.25	225	66.8	Brn	High
	8	6.99	547	66.3	"	"
	9	7.12	511	66.0	"	"
	10	7.15	536	66.5	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
Cloudy
Yellow
Brown

ODOR: none

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer(Teflon®)
___ Centrifugal Pump ___ Bailer (PVC)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Well Wizard™ ___ Dedicated

Other: ____

SAMPLING EQUIPMENT

___ 2" Bladder Pump ___ Bailer(Teflon®)
___ DDL Sampler ___ Bailer (PVC/disposable)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Well Wizard™ ___ Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____
REMARKS: ____

SIGNATURE: [signature] Page 8 of 10

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW8
SAMPLE ID: MW8
CLIENT NAME: Safety Kleen
LOCATION: Oakland

PROJECT NO: 20005-009
PURGED BY: Ted
SAMPLED BY: Ted

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	7.80	VOLUME IN CASING (gal)	3.6
DEPTH TO WATER (feet):	7.81	CALCULATED PURGE (gal)	10.7
DEPTH OF WELL (feet):	29.18	ACTUAL PURGE VOL. (gal)	11

DATE PURGED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1116
DATE SAMPLED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1640

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): none

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	8	7.41	384	68.0	Brn	High
	9	7.43	290	66.8	"	"
	10	7.29	372	67.0	"	"
	11	7.21	373	67.4	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
(Cloudy)
Yellow
(Brown)

ODOR: ____

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: Sheen on water noted when purging

SIGNATURE: ____

SEACOR
WATER SAMPLE FIELD DATA SHEET

WELL ID: MW12
SAMPLE ID: MW12
CLIENT NAME: Safety Kleen
LOCATION: Oakland

PROJECT NO: 70005-009
PURGED BY: BDL
SAMPLED BY: BDL

TYPE: Groundwater X Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 X 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION: (feet/MSL):	6.74	VOLUME IN CASING (gal.)	3.5
DEPTH TO WATER (feet):	7.46	CALCULATED PURGE (gal.)	10.6
DEPTH OF WELL (feet):	28.25	ACTUAL PURGE VOL. (gal.)	11.5

DATE PURGED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1535
DATE SAMPLED: 7-30-93 Start (2400 Hr) ____ End (2400 Hr.) 1650

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): None

FIELD MEASUREMENTS

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (NTU)
	9	6.95	802	71.1	Brn	High
	10	6.89	702	70.2	"	"
	11.5	6.83	747	70.1	"	"

D.O. (ppm): ____ COLOR, COBALT (0-100): ____

Clear
(Cloudy)
Yellow
(Brown)

ODOR: None

PURGING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	Centrifugal Pump	X	Bailer (PVC)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

SAMPLING EQUIPMENT

___	2" Bladder Pump	___	Bailer(Teflon®)
___	DDL Sampler	X	Bailer (PVC)(disposable)
___	Submersible Pump	___	Bailer (Stainless Steel)
___	Well Wizard™	___	Dedicated

Other: ____

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: ____

SIGNATURE: [signature] Page 10 of 10

APPENDIX B

CERTIFIED LABORATORY RESULTS - VAPOR

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

4080 Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 Inside CA
(800) 423-7143 Outside CA
(510) 825-0720 FAX

Client Number: SEA01SFK01
Consultant Project Number: 70005-009-01
Work Order Number: C3-06-0180

June 17, 1993

Greg Hoehn
SEACOR
90 New Montgomery, Ste. 620
San Francisco, CA 94105

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 06/10/93, under chain of custody record 7547.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certification number E1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: SEA01SFK01
Consultant Project Number: 70005-009-01
Work Order Number: C3-06-0180

Table 1

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons as Mineral Spirits in Air

Modified EPA Method 8015[a]

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. BFB surrogate recovery acceptability limits are 70-130%.

GTEL Sample Number		01	02	061193GCE	
Client Identification		I-1	E-1	METHOD BLANK	
Date Sampled		06/10/93	06/10/93	--	
Date Analyzed		06/11/93	06/11/93	06/11/93	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
TPH as Mineral Spirits	10	320	30	<10	
Detection Limit Multiplier		1	1	1	
BFB surrogate, % recovery		107	101	104	

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Number: A 1541

SEACOR Chain-of-Custody Record

Address: 90 New Montgomery Suite 620
San Francisco CA 94105

C3060180

Project # 70005-009-01 Task # SK10
Project Manager Greg Hoehn
Laboratory G-Tel 4080 Pike Lane Concord
Turn-around time: normal 5 Day ca

Sampler's Name: Nancy Bond
Sampler's Signature: Nancy Bond

Analysis Request

Sample ID	Date	Time	Matrix	TPHg/BTEX 8015 (modified)/8020	TPHd 8015 (modified)	TPH 418.1	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCB's 608/8080	Total Lead 7421	Priority Pollutant Metals (13)	TCLP Metals				Comments/ Instructions	Number of Containers
I-1 01	6/10/93	230 pm	air		X													TPH as Mineral Spirits	1
E-1 02	6/10/93	200 pm	air		X													TPH as Mineral Spirits	1
PD-1 03	6/10/93	145 pm	water						BTEX		8010							Please HOLD	
PD-2 04	6/10/93	145 pm	water															Please HOLD	

Special Instructions/Comments:

Relinquished by:
Sign
Print Nancy Bond
Company SEACOR
Time 230 pm Date 6/10/93

Received by:
Sign
Print Rick Mullins
Company Concord Lab
Time 240 Date 6/10/93

Relinquished by:
Sign
Print Rick Mullins
Company Concord Lab
Time 300 Date 6/10/93

Received by:
Sign
Print BRIAN CRISP
Company GTEL
Time 1500 Date 6/10/93

Sample Receipt

Total no. of containers	4
Chain of custody seals:	Y
Rec'd good condition/cold:	Y
Conforms to record:	Y

Client:
Client Contact:
Client Phone Number:

Date ___ / ___ / ___ Page ___ of ___

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

4080 Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 Inside CA
(800) 423-7143 Outside CA
(510) 825-0720 FAX

JUL 14 1993

Client Number: SEAS02SFK01
Consultant Project Number: 70005-009-01
Project ID: Not Given
Work Order Number: C3-06-0439

July 13, 1993

Greg Hoehn
SEACOR
90 New Montgomery, Ste. 620
San Francisco, CA 94105

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 06/23/93, under chain of custody record 7546.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certificate numbers 194 and 1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: SEAS02SFK01
Consultant Project Number: 70005-009-01
Project ID: Not Given
Work Order Number: C3-06-0439

Table 1

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons as Mineral Spirits in Air

Modified EPA Method 8015[a]

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. BFB surrogate recovery acceptability limits are 70-130%.

GTEL Sample Number		01	02	062493GCE	
Client Identification		I-2	E-2	METHOD BLANK	
Date Sampled		06/23/93	06/23/93	--	
Date Analyzed		06/24/93	06/24/93	06/24/93	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
TPH as Mineral Spirits	10	400	<10	<10	
Detection Limit Multiplier		1	1	1	
BFB surrogate, % recovery		113	107	86.9	

GTEL ENVIRONMENTAL LABORATORIES, INC.

SEACOR Chain-of-Custody Record

C3060439

Address: 90 New Montgomery Suite 1620
San Francisco, CA 94105

Project # 2005-007-01 Task # 1.16
Project Manager Greg Hoehn
Laboratory Gel (Concord)
Turn-around time: normal

Sampler's Name: Nancy Bond
Sampler's Signature:

Analysis Request

Sample ID	Date	Time	Matrix	TPHg/BTEX 8015 (modified)/8020	TPHd 8015 (modified)	TPH 418.1	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601 (8010)	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCB's 608/8080	Total Lead 7421	Priority Pollutant Metals (13)	TCLP Metals				Comments/ Instructions	Number of Containers
I-2	6/23/93	345 pm	air	X					X									TPH as Mineral Spirits	1
E-2	6/23/93	330 pm	air	X					X									TPH as Mineral Spirits	1

Special Instructions/Comments:

Relinquished by:
Sign
Print Nancy Bond
Company SEACOR
Time 4:02 pm Date 6/23/93

Received by:
Sign
Print
Company
Time Date

Relinquished by:
Sign
Print
Company
Time Date

Received by:
Sign Corinne Bebbey
Print
Company GTEL
Time 6:05 Date 6/23/93

Sample Receipt
Total no. of containers: 2
Chain of custody seals:
Rec'd good condition/cold:
Conforms to record: yes

Client:
Client Contact:
Client Phone Number:

Date ___ / ___ / ___ Page ___ of ___

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: SEA02SFK01
Consultant Project Number: 70005-009-01
Project ID: Not Given
Work Order Number: C3-06-0439

July 10, 1993

Greg Hoehn
SEACOR
90 New Montgomery, Ste. 620
San Francisco, CA 94105

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 06/23/93, under chain of custody record 7546.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certificate numbers 194 and 1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: SEA02SFK01
Consultant Project Number: 70005-009-01
Project ID: Not Given
Work Order Number: C3-06-0439

Table 1

ANALYTICAL RESULTS
Volatile Halocarbons and Aromatics in Air
EPA Method 601 and 602[a]

GTEL Sample Number		01	02	C062493	
Client Identification		I-2	E-2	METHOD BLANK	
Date Sampled		06/23/93	06/23/93	–	
Date Analyzed		06/25/93	06/25/93	06/24/93	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	
Bromomethane	0.5	<0.5	<0.5	<0.5	
Vinyl chloride	1	<1	<1	<1	
Chloroethane	0.5	<0.5	<0.5	<0.5	
Methylene chloride	0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethene	0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	
1,2-Dichloroethene	0.5	<0.5	<0.5	<0.5	
Chloroform	0.5	<0.5	<0.5	<0.5	
1,2-Dichloroethane	0.5	<0.5	<0.5	<0.5	
1,1,1-Trichloroethane	0.5	1	<0.5	<0.5	
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	
Trichloroethene	0.5	<0.5	<0.5	<0.5	
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	
2-Chloroethylvinyl ether	1	<1	<1	<1	
Bromoform	0.5	<0.5	<0.5	<0.5	
Tetrachloroethene	0.5	<0.5	<0.5	<0.5	
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	
Chlorobenzene	0.5	<0.5	<0.5	<0.5	
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	
Benzene	0.5	<0.5	<0.5	<0.5	
Toluene	0.5	<0.5	<0.5	<0.5	
Ethylbenzene	0.5	1	<0.5	<0.5	
Xylenes, total	0.5	2	<0.5	<0.5	
Detection Limit Multiplier		1	1	1	
BFB surrogate, %recovery		121	125	72.8	

a. Federal Register, Vol. 49, October 26, 1984.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Number: A 7546

SEACOR Chain-of-Custody Record

Address: 90 New Montgomery Suite 1620
San Francisco CA 94105

C3060439

Project # 70005-009-01 Task # SK10
Project Manager Greg Hoehn
Laboratory G-Tel (Concord)
Turn-around time: normal
Sampler's Name: Nancy Bond
Sampler's Signature: Nancy Bond

Analysis Request

Sample ID	Date	Time	Matrix	TPHg/BTEX 8015 (modified)/8020	TPHd 8015 (modified)	TPH 418.1	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601 (8010)	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCB's 608/8080	Total Lead 7421	Priority Pollutant Metals (13)	TCLP Metals	Comments/ Instructions	Number of Containers
I-2	6/23/93	345 pm	air	X					X						TPH as Mineral Spirits	1
E-2	6/23/93	330 pm	air	X					X						TPH as Mineral Spirits	1

Special Instructions/Comments:

Relinquished by:
Sign Nancy Bond
Print Nancy Bond
Company SEACOR
Time 4:02 pm Date 6/23/93

Received by:
Sign
Print
Company
Time Date

Relinquished by:
Sign
Print
Company
Time Date

Received by:
Sign Corinne Bebbey
Print
Company GTEL
Time 6:05 Date 6/23/93

Sample Receipt
Total no. of containers: 2
Chain of custody seals:
Rec'd good condition/cold:
Conforms to record: yes

Client:
Client Contact:
Client Phone Nu

Date / / Page of

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Suite C
Concord, CA 94520
(510) 685-7852
(800) 544-3422 Inside CA
FAX (510) 825-0720

Client Number: SEA02SFK01
Consultant Project Number: 70005-009-04
Project ID: Safety Kleen
Work Order Number: C3-08-0163

August 19, 1993

Greg Hoehn
SEACOR
1390 Willow Pass Rd., Ste. 360
Concord, CA 94520

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 08/12/93, under chain of custody record 8443.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certification number E1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Ron Martinez
Asst. Lab Director for
Eileen F. Bullen
Laboratory Director

Client Number: SEA02SFK01
Consultant Project Number: 70005-009-04
Project ID: Safety Kleen
Work Order Number: C3-08-0163

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Mineral Spirits in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02	E081393	
Client Identification		PADRE INF	BLOWER EFL	METHOD BLANK	
Date Sampled		08/11/93	08/11/93	–	
Date Analyzed		08/13/93	08/13/93	08/13/93	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.5	0.9	<0.5	<0.5	
Toluene	0.5	2	<0.5	<0.5	
Ethylbenzene	0.5	<0.5	<0.5	<0.5	
Xylene, total	0.5	20	<0.5	<0.5	
BTEX, total	–	23	–	–	
TPH as mineral spirits	10	570	34	<10	
Detection Limit Multiplier		1	1	1	
TFT surrogate, % recovery		126	124	94.9	

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. TFT surrogate recovery acceptability limits are 70-130%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SEA02SFK01
Consultant Project Number: 70005-009-04
Project ID: Safety Kleen
Work Order Number: C3-08-0163

Table 1

ANALYTICAL RESULTS

Purgeable Halocarbons in Air
EPA Method 601[a]

GTEL Sample Number		01	02	C081393	
Client Identification		PADRE INF	BLOWER EFL	METHOD BLANK	
Date Sampled		08/11/93	08/11/93	--	
Date Analyzed		08/13/93	08/13/93	08/13/93	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	
Bromomethane	0.5	<0.5	<0.5	<0.5	
Vinyl chloride	1	<1	<1	<1	
Chloroethane	0.5	<0.5	<0.5	<0.5	
Methylene chloride	0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethene	0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	
1,2-Dichloroethene	0.5	<0.5	<0.5	<0.5	
Chloroform	0.5	<0.5	<0.5	<0.5	
1,2-Dichloroethane	0.5	<0.5	<0.5	<0.5	
1,1,1-Trichloroethane	0.5	0.6	<0.5	<0.5	
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	
Trichloroethene	0.5	<0.5	<0.5	<0.5	
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	
2-Chloroethylvinyl ether	1	<1	<1	<1	
Bromoform	0.5	<0.5	<0.5	<0.5	
Tetrachloroethene	0.5	<0.5	<0.5	<0.5	
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	
Chlorobenzene	0.5	<0.5	<0.5	<0.5	
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	
Detection Limit Multiplier		1	1	1	
BFB surrogate, % recovery		93.4	87.6	100	

a. Federal Register, Vol. 49, October 26, 1984. BFB surrogate recovery acceptability limits are 65-135%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Number: A 0443

SEACOR Chain-of-Custody Record

Address: 1390 Willow Pass Rd Ste 300
Concord CA 94520
510 686 9280

Project # 20005-009-04 Task # ____
Project Manager Greg Hoehn
Laboratory GTEL
Turn-around time: ____
Sampler's Name: Bob Robitaille
Sampler's Signature: [signature]

Analysis Request

Sample ID	Date	Time	Matrix	TPHg/BTEX 8015 (modified)/8020	TPHd 8015 (modified)	TPH 418.1	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCB's 608/8080	Total Lead 7421	Priority Pollutant Metals (13)	TCLP Metals	BTEX / TPH-gas-mineral Spirits			Comments/ Instructions	Number of Containers
01 Padre Inf.	8-11-93	16:10	Vapor						X						X				1
02 Blower Eff.	8-11-93	16:15	Vapor						X						X				2
															~~X~~				

Relinquished by: Sign [signature] Print Bob Robitaille Company SEACOR Time ____ Date ____

Received by: Sign [signature] Print Greg Hoehn Company SEACOR Time 0700 Date 8-12

Relinquished by: Sign [signature] Print Greg Hoehn Company SEACOR Time 11:10 Date 8-12

Received by: Sign [signature] Print John Weber Company GTEL Time 11:10 Date 8-12-93

Special Instructions/Comments:

C30801163

Sample Receipt

Total no. of containers	
Chain of custody seals:	
Rec'd good condition/cold:	
Conforms to record:	

Client: ____
Client Contact: ____
Client Phone Number: ____

Date 08 / 11 / 93 Page 1 of 1

APPENDIX C

CERTIFIED LABORATORY RESULTS - GROUNDWATER

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Suite C
Concord, CA 94520
(510) 685-7852
(800) 544-3422 Inside CA
FAX (510) 825-0720

Client Number: SEA02SFK01
Consultant Project Number: 70005-009
Project ID: Safety Kleen
400 Market St.
Oakland, CA
Work Order Number: C3-08-0012

August 17, 1993

Greg Hoehn
Seacor
1390 Willow Pass Rd., Ste. 360
Concord, CA 94520

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/30/93, under chain of custody record 8444.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certification number E1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: SEA02SFK01
Consultant Project Number: 70005-009
Project ID: Safety Kleen
400 Market St.
Oakland, CA
Work Order Number: C3-08-0012

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Mineral Spirits in Water

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW4	MW5	MW6
Date Sampled		07/29/93	07/29/93	07/29/93	07/29/93
Date Analyzed		08/11/93	08/11/93	08/11/93	08/11/93
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	<0.3
Toluene	0.3	<0.3	<0.3	<0.3	<0.3
Ethylbenzene	0.3	<0.3	<0.3	<0.3	<0.3
Xylene, total	0.5	<0.5	<0.5	<0.5	<0.5
BTEX, total	–	–	–	–	–
TPH as Mineral Spirits	100	<100	<100	<100	<100
Detection Limit Multiplier		1	1	1	1
TFT surrogate, % recovery		109	444[b]	109	115

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Bromofluorobenzene surrogate recovery acceptability limits are 70-130%.

b. TFT recovery high due to matrix interference.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SEA02SFK01
Consultant Project Number: 70005-009
Project ID: Safety Kleen
400 Market St.
Oakland, CA
Work Order Number: C3-08-0012

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Mineral Spirits in Water

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW3	MW10	MW11	MW2
Date Sampled		07/29/93	07/30/93	07/30/93	07/30/93
Date Analyzed		08/11/93	08/11/93	08/11/93	08/11/93
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	<0.3
Toluene	0.3	<0.3	<0.3	<0.3	<0.3
Ethylbenzene	0.3	<0.3	<0.3	<0.3	<0.3
Xylene, total	0.5	<0.5	<0.5	<0.5	<0.5
BTEX, total	–	–	–	–	–
TPH as Mineral Spirits	100	<100	<100	<100	<100
Detection Limit Multiplier		1	1	1	1
TFT surrogate, % recovery		110	106	107	111

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Bromofluorobenzene surrogate recovery acceptability limits are 70-130%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SEA02SFK01
Consultant Project Number: 70005-009
Project ID: Safety Kleen
400 Market St.
Oakland, CA
Work Order Number: C3-08-0012

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Mineral Spirits in Water

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		09	10	GC-S BLANK	
Client Identification		MW8	MW12	METHOD BLANK	
Date Sampled		07/30/93	07/30/93	–	
Date Analyzed		08/11/93	08/11/93	08/11/93	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	
Toluene	0.3	<0.3	<0.3	<0.3	
Ethylbenzene	0.3	<0.3	<0.3	<0.3	
Xylene, total	0.5	<0.5	<0.5	<0.5	
BTEX, total	–	–	–	–	
TPH as Mineral Spirits	100	<100	<100	<100	
Detection Limit Multiplier		1	1	1	
TFT surrogate, % recovery		109	108	101	

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Bromofluorobenzene surrogate recovery acceptability limits are 70-130%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SEA02SFK01
Consultant Project Number: 70005-009
Project ID: Safety Kleen
400 Market St.
Oakland, CA
Work Order Number: C3-08-0012

Table 1

ANALYTICAL RESULTS

Purgeable Halocarbons in Water

EPA Method 601[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW4	MW5	MW6
Date Sampled		07/29/93	07/29/93	07/29/93	07/29/93
Date Analyzed		08/12/93	08/12/93	08/12/93	08/12/93
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.5	<0.5	<0.5	0.6	<0.5
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethene	0.5	<0.5	53	<0.5	<0.5
Chloroform	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	<0.5	1100	6	5
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	19	<0.5
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		92.0	86.6	104	103

a. Federal Register, Vol. 49, October 26, 1984. BFB surrogate recovery acceptability limits are 65-135%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SEA02SFK01
Consultant Project Number: 70005-009
Project ID: Safety Kleen
400 Market St.
Oakland, CA
Work Order Number: C3-08-0012

Table 1 (Continued)

ANALYTICAL RESULTS

Purgeable Halocarbons in Water

EPA Method 601[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW3	MW10	MW11	MW2
Date Sampled		07/29/93	07/30/93	07/30/93	07/30/93
Date Analyzed		08/12/93	08/12/93	08/12/93	08/12/93
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.5	<0.5	2	2	<0.5
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethene	0.5	<0.5	17	3	<0.5
Chloroform	0.5	<0.5	0.5	<0.5	<0.5
1,2-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	<0.5	0.8	2	<0.5
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	<0.5	54	36	<0.5
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		103	90.0	69.8	85.0

a. Federal Register, Vol. 49, October 26, 1984. BFB surrogate recovery acceptability limits are 65-135%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SEA02SFK01
Consultant Project Number: 70005-009
Project ID: Safety Kleen
400 Market St.
Oakland, CA
Work Order Number: C3-08-0012

Table 1 (Continued)

ANALYTICAL RESULTS

Purgeable Halocarbons in Water

EPA Method 601[a]

GTEL Sample Number		09	10	C08	
Client Identification		MW8	MW12	METHOD BLANK	
Date Sampled		07/30/93	07/30/93	–	
Date Analyzed		08/12/93	08/12/93	08/12/93	
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	
Bromomethane	0.5	<0.5	<0.5	<0.5	
Vinyl chloride	1	<1	<1	<1	
Chloroethane	0.5	<0.5	<0.5	<0.5	
Methylene chloride	0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethene	0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethane	0.5	<0.5	2	<0.5	
1,2-Dichloroethene	0.5	1	3	<0.5	
Chloroform	0.5	<0.5	<0.5	<0.5	
1,2-Dichloroethane	0.5	5	2	<0.5	
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	
Trichloroethene	0.5	31	30	<0.5	
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	
2-Chloroethylvinyl ether	1	<1	<1	<1	
Bromoform	0.5	<0.5	<0.5	<0.5	
Tetrachloroethene	0.5	<0.5	<0.5	<0.5	
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	
Chlorobenzene	0.5	<0.5	<0.5	<0.5	
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	
Detection Limit Multiplier		1	1	1	
BFB surrogate, % recovery		86.4	72.4	108	

a. Federal Register, Vol. 49, October 26, 1984. BFB surrogate recovery acceptability limits are 65-135%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Number: A

SEACOR Chain-of-Custody Record

Address: 1390 Willow Pass Rd Ste 360
Concord CA 94520
(510) 686-9780

C30800 12

Project # 20005-009 Task # _____
Project Manager Greg Hoehn
Laboratory GTEL
Turn-around time: Normal

Sampler's Name: Bob Robitaille
Sampler's Signature: _____

Analysis Request

Sample ID	Date	Time	Matrix	TPHg/BTEX 8015 (modified)/8020	TPHd 8015 (modified)	TPH 418.1	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCB's 608/8080	Total Lead 7421	Priority Pollutant Metals (13)	TCLP Metals	BTEX - TPH as mineral spirits			Comments/ Instructions	Number of Containers
01 MW1 NDV	7-29-93	1550	GW						X						X				
02 MW4 ND		1605							X						X				
03 MW5 ND		1615							X						X				
04 MW6 ND		1630							X						X				
05 MW3 ND		1645							X						X				
06 MW10 NP	7-30-93	1600							X						X				
07 MW11 NP		1615							X						X				
08 MW2 NP		1625							X						X				
09 MW8 NP		1640							X						X				
10 MW12 NP		1650							X						X				

U. Uhlaney 8/1/93

Special Instructions/Comments:
Safety Kleen
400 Market St.
Oakland CA.

Relinquished by:	Received by:
Sign _____	Sign _____
Print Bob Robitaille	Print Brian S. Crisp
Company SEACOR	Company CSSL
Time 8:20 Date 08-01-93 ~~7-30-93~~	Time 0820 Date 8/1/93
Relinquished by:	Received by:
Sign _____	Sign _____
Print _____	Print _____
Company _____	Company _____
Time _____ Date _____	Time _____ Date _____

Sample Receipt

Total no. of containers	40
Chain of custody seals:	Y
Rec'd good condition/cold:	3°C
Conforms to record:	Y

Client: _____
Client Contact: _____
Client Phone Number: _____

Date 7 / 30 / 93 Page 1 of 1