One Market Plaza
Spear Street Tower, Suite 717
San Francisco, CA 94105
(415) 957-9557

GEOMATRIX

30 November 1989
1459B

Mr. John Adams
Kaiser Foundation Health Plan, Inc.
1950 Franklin
Oakland, CA 94612

Subject: Soil Sampling
Kaiser Hospital
280 W. MacArthur Boulevard
Oakland, California

Dear Mr. Adams:

This letter transmits the results of the recently completed soil sampling at Kaiser Hospital located at 280 W. MacArthur Boulevard in Oakland, California. The soil sampling was performed at your request to investigate the extent of a release of mineral spirits into the soils near the existing mechanical building. The presence of mineral spirits in the soil below the new sewer line trench, located approximately seven feet from the mechanical building, was previously detected during soil sampling by Geomatrix Consultants and the results were presented in our 12 April 1989 letter report to Mr. John Fudge of Cometta and Cianfichi.

The recent sampling was completed on 13 November 1989 and involved drilling six soil borings with a hollow-stem auger drillrig within 20 feet of the mechanical building, as shown on Figure 1. The borings were drilled to depths of 10 to 15 feet, and the boring logs prepared by a Geomatrix geologist are presented as Figures 2 through 7. In most of the borings, the soil encountered below the asphalt surfacing consisted of six inches to two feet of sandy clay fill underlain by clay and sandy clay to the maximum depth of drilling (15 feet). However, boring B-6 encountered approximately 4.5 feet of loose sand to a depth of 5.5 feet underlain by clay. Groundwater was not encountered within the depth of the borings.

Three to four soil samples were collected in each boring with a modified California drive sampler lined with clean brass liners. Each liner was removed from the sampler, capped with aluminum foil and plastic covers, sealed with electrical tape, labelled, placed in a plastic bag, and stored in an ice chest on ice. The soil samples were delivered to Brown and Caldwell Analytical Laboratory in Emeryville, California under chain-of-custody procedures and selected samples were analyzed for total fuel hydrocarbons including benzene, toluene, xylene, and ethylbenzene (BTX&E) by modified EPA Method 8015. The laboratory report indicates that mineral spirits were detected in only one boring, B-2, at a concentration of 15 milligrams per kilogram (mg/kg) and 80 mg/kg at depths of 4.5 feet and 9.5 feet, respectively. Xylenes were also detected in this boring at a concentration of 0.4 mg/kg at 9.5 feet. A soil sample collected from a depth of 14.5 feet in this boring did not have detectable concentrations of

any analyzed compounds. None of the analyzed soil samples from other borings had detectable concentrations of mineral spirits or BTX&E. The analytical results are presented in Table 1, and the laboratory reports and chain-of-custody form are attached.

Diesel was detected in two isolated soil samples at concentrations of 42 mg/kg and 29 mg/kg (Table 1). Due to the low concentrations of diesel in these samples and the isolated occurrence pattern, diesel is not considered to be a concern within the area of sampling.

We suggest that, in order to minimize the potential for future liability to Kaiser, all soil with total petroleum hydrocarbons including mineral spirits within 25 feet of groundwater and with concentrations of over 10 mg/kg should be removed and handled as a hazardous material, based on a guidance document for underground storage tanks prepared by the California State Water Resources Control Board. The results of the soil sampling suggest that the vicinity of Boring B-2 and Sample #1 (Figure 1) may be underlain by soil with concentrations exceeding 10 mg/kg to a depth of approximately 12 feet. The estimated lateral extent of affected soil is shown on Figure 1. This extent is estimated from available data, for the purpose of estimating the cost and time required for handling this soil. However, during excavation the extent of affected soils should be estimated by our representative.

The total estimated volume of soil which is expected to be hazardous is approximately 25 cubic yards. This material can either be hauled directly to a Class I disposal facility or treated on-site by aeration, followed by confirmation sampling and disposal at a Class III facility. Aeration would involve spreading the material on plastic sheeting in a layer approximately one foot thick, and reworking the material as often as possible to ensure complete aeration. Mineral spirits evaporate quickly and confirmation sampling could take place as soon as one month after initiating this procedure. Soil concentrations should be below approximately 10 ppm before a Class III disposal facility will consider acceptance of the waste. A permit would be required from the Bay Area Air Quality Management District before stockpiling and aerating the soil. Alternatively, the soil could be disposed of directly at a Class I facility, eliminating the need for further sampling and disposal.

We recommend that a representative of our firm be present during excavation to monitor the removal of all affected soil by continuous screening with a photo-ionization detector, and to acquire approximately six soil samples from the completed excavation walls and floor to confirm the removal of all affected soil. These soil samples should be analyzed for total fuel hydrocarbons as mineral spirits.

Mineral spirits is considered a hazardous substance by the California Department of Health Services (DHS). Therefore, an Unauthorized Release Form must be completed by Kaiser or the property owner, as we have previously informed you. In the county of Alameda the form should be sent to the Alameda County Hazardous Materials Program, who will send copies to the DHS and the Regional Water Quality Control Board (RWQCB). Based on our experience with the RWQCB, verification that the release has not affected the waters of the state may be required in the future. This verification would involve the installation of one to three wells, one of which should be located as close as possible to the expected release point shown on Figure 1. We understand the proposed mechanical building extension will cover this area, and future access to the site will be restricted. The installation of wells within basements may or may not be possible depending on construction conditions.

We appreciate the opportunity to provide you with our consulting geologic and engineering services. If we can be of further assistance please contact either of the undersigned.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

Cheri D. Young
Senior Staff Geologist

John D. Gallinatti, CEG #1335
Senior Project Geologist

Enclosures

cc: Larry Swafford, Kaiser Construction Services

GEOMATRIX

TABLE 1

SOIL BORING ANALYTICAL RESULTS
Kaiser Hospital
280 W. MacArthur Boulevard
Oakland, California

Concentrations in milligrams/Kilogram (ppm)

Sample No.	Depth (ft)	Mineral Spirits	Diesel	Benzene	Toluene	Xylene	Ethyl-benzene
B1-1-3	2.5	ND	ND	ND	ND	ND	ND
B1-2-1	5.0	ND	ND	ND	ND	ND	ND
B1-3-1	10.0	ND	ND	ND	ND	ND	ND
B1-4-1	15.0	NA	NA	NA	NA	NA	NA
B2-1-1	2.0	ND	ND	ND	ND	ND	ND
B2-2-2	4.5	15	ND	ND	ND	ND	ND
B2-3-2	9.5	80	ND	ND	ND	0.4	ND
B2-4-2	14.5	ND	ND	ND	ND	ND	ND
B3-1-1	2.0	ND	ND	ND	ND	ND	ND
B3-2-1	5.0	ND	42	ND	ND	ND	ND
B3-3-1	10.0	ND	ND	ND	ND	ND	ND
B3-4-2	14.5	NA	NA	NA	NA	NA	NA
B4-1-1	2.0	ND	ND	ND	ND	ND	ND
B4-2-1	5.0	ND	ND	ND	ND	ND	ND
B4-3-1	10.0	NA	NA	NA	NA	NA	NA
B5-1-1	2.0	ND	ND	ND	ND	ND	ND
B5-2-1	5.0	NA	NA	NA	NA	NA	NA
B5-3-1	10.0	NA	NA	NA	NA	NA	NA
B6-1-1	2.0	ND	ND	ND	ND	ND	ND
B6-2-1	5.0	ND	29	ND	ND	ND	ND
B6-3-1	10.0	ND	ND	ND	ND	ND	ND
B6-4-1	15.0	NA	NA	NA	NA	NA	NA

ND = Not detected. Detection limits achieved were benzene, toluene, xylene, and ethylbenzene, 0.3 mg/kg; total fuel hydrocarbons as diesel and mineral spirits, 10 mg/kg.

NA = Not analyzed.

All samples were collected on November 1989.

Analyses were performed by Brown and Caldwell Laboratories by modified EPA Method 8015.

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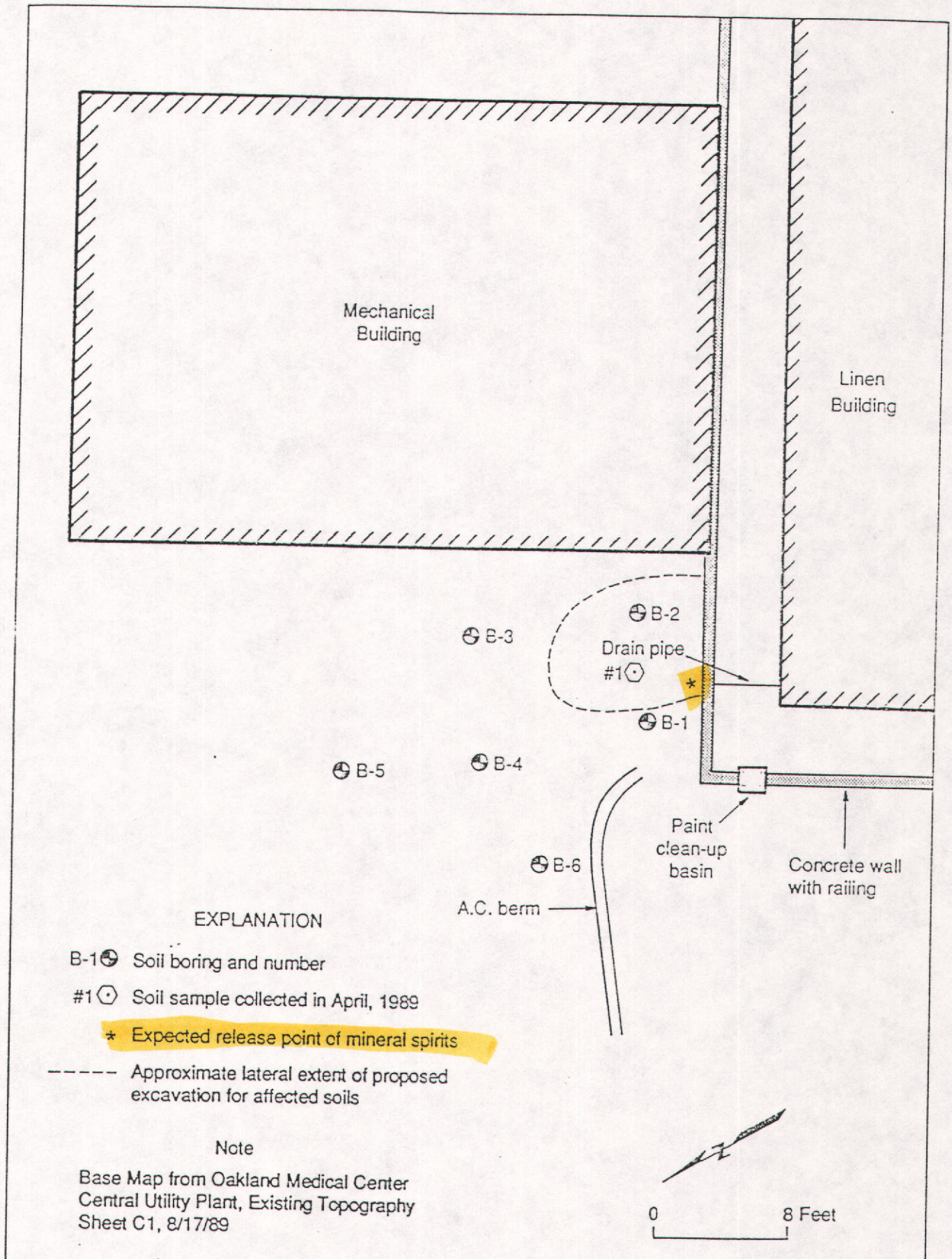

GEOMATRIX

SOIL BORING LOCATIONS
Kaiser Hospital
280 W. McArthur Blvd.
Oakland, California

Figure 1

Project No. 1459B

PROJECT: Kaiser Oakland	**Log of Boring No. B1**
BORING LOCATION: Near mechanical building	ELEVATION AND DATUM
DRILLING CONTRACTOR: HEW Drilling	DATE STARTED: 11/13/89 / DATE FINISHED: 11/13/89
DRILLING METHOD: 6" Hollow Stem Auger	TOTAL DEPTH: 15.0 Feet / MEASURING POINT
DRILLING EQUIPMENT: CME 45B	DEPTH TO WATER: FIRST --- / COMPL. -- / 24 HRS. --
SAMPLING METHOD: 2" split spoon/4" split spoon	LOGGED BY: D.R. Wuthrich
HAMMER WEIGHT: 140 Lbs. / DROP: 30"	RESPONSIBLE PROFESSIONAL: J.D. Gallinatti / REG. NO.: CEG #1335

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION (NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.)	ANALYTICAL RESULTS
					Surface Elevation:	
1					2" Asphalt cover over FILL (SC-CH) Brown poorly sorted sandy clay fill	
2	B-1 1-3					STX&E: ND TPH: ND
3			16		SANDY CLAY (CL) Tannish brown clay with trace very fine sand, laminated, soft to medium stiff, damp	
4			40			
5	B-1 2-1					STX&E: ND TPH: ND
6						
7					Grades to fine sand, angular, medium stiff, damp, sandy clay	
8						
9			42		Gradational contact CLAY (CL)	
10	B-1 3-1				Tannish-brown, clay, no sand, little manganese (?) stringers and flakes; tannish brown, medium stiff, damp	Not analyzed
11						
12						
13					Medium stiff, damp	
14						

BL-1-89/Modified

Geomatrix Consultants	Project No. 1459B	Figure 2

PROJECT:
Kaiser Oakland

Log of Boring No. B1 (cont'd.)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	LITHOLOGY	DESCRIPTION: NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	ANALYTICAL RESULTS
15	B-1 4-1		46			Not analyzed
					Bottom of boring 15.0 feet	
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
26						
27						
28						
29						
30						

BL-2-69 Modified

PROJECT: Kaiser Oakland	**Log of Boring No. B2**
BORING LOCATION: Near mechanical building	ELEVATION AND DATUM
DRILLING CONTRACTOR: HEW Drilling	DATE STARTED: 11/13/89 / DATE FINISHED: 11/13/89
DRILLING METHOD: 6" Hollow Stem Auger	TOTAL DEPTH: 15.0 Feet / MEASURING POINT
DRILLING EQUIPMENT: CME 45B	DEPTH TO WATER: FIRST -- / COMPL -- / 24 HRS. --
SAMPLING METHOD: 2" split spoon/4" split spoon	LOGGED BY: D.R. Wuthrich
HAMMER WEIGHT: 140 Lbs. / DROP: 30"	RESPONSIBLE PROFESSIONAL: J.D. Gallinatti / REG. NO.: CEG #1335

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION (NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.)	ANALYTICAL RESULTS
					Surface Elevation:	
1	B-2 1-1		12		2" Asphalt cover over 6" base rock SANDY CLAY FILL (SC - CH) Brown (7.5YR 5/2), clay with some fine, subrounded to round sand, medium stiff, damp	
2						BTX&E: ND TPH: ND
3					CLAY with SAND (CL) Dark brown (7.5YR 4/2) medium stiff, clay with little fine sand, damp, hydrocarbon odor	
4	B-2 2-2		27			
5						BTX&E: ND TPH: 15 mg/kg (mineral spirits)
6						
7						
8						
9	B-2 3-2		33		CLAY (CL) Strong dark brown (7.5YR 5/6), clay with little fine sand, medium stiff, damp, hydrocarbon odor	
10						BT&E: ND Xylene: 0.4 mg/kg TPH: 80 mg/kg (mineral spirits)
11						
12						
13						
14						

BL-1-88/Modified

Geomatrix Consultants	Project No. 1459B	Figure 3

PROJECT:
Kaiser Oakland

Log of Boring No. B2 (cont'd.)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION: NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	ANALYTICAL RESULTS
15	B-2 4-2		32		With little very fine sand; occasional manganese (?) oxide staining	BTX&E: ND TPH: ND
					Bottom of boring 15.0 feet	
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
26						
27						
28						
29						
30						

EL-2-89/Modified

PROJECT: Kaiser Oakland	Log of Boring No. B3	
BORING LOCATION: Near mechanical building	ELEVATION AND DATUM	
DRILLING CONTRACTOR: HEW Drilling	DATE STARTED: 11/13/89	DATE FINISHED: 11/13/89
DRILLING METHOD: 6" Hollow Stem Auger	TOTAL DEPTH: 15.0 Feet	MEASURING POINT
DRILLING EQUIPMENT: CME 45B	DEPTH TO WATER: FIRST -- / COMPL. -- / 24 HRS. --	
SAMPLING METHOD: 2"/4" split spoon	LOGGED BY: D.R. Wuthrich	
HAMMER WEIGHT: 140 Lbs. / DROP: 30"	RESPONSIBLE PROFESSIONAL: J.D. Gallinatti	REG. NO.: CEG #1335

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION (NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.)	ANALYTICAL RESULTS
					Surface Elevation:	
0					2" Asphalt cover over 6" base rock	
1			32		CLAY (CL) Strong brown (7.5 YR 5/6), clay, soft to medium stiff, damp, manganese (?) staining. upper 1/2' is a fine angular sand (SP) with trace clay	
2	B-3 1-1					BTX&E: ND TPH: ND
3						
4			28			
5	B-3 2-1					BTX&E: ND TPH: 42 mg/kg (diesel)
6					With little fine, angular sand; rarely with clasts to 1/4"	
7						
8					Occasional angular red chert clasts to 1/4"	
9			49			
10	B-3 3-1					BTX&E: ND TPH: ND
11						
12					Trace sand, little silt	
13						
14					SAND (SP) Fine, angular to subrounded, well sorted, soft, damp	

BL-1-89-Modified

Geomatrix Consultants	Project No. 1459B	Figure 4

PROJECT:
Kaiser Oakland

Log of Boring No. B3 (cont'd.)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	LITHOLOGY	DESCRIPTION: NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	ANALYTICAL RESULTS
15	B-3 4-2		27		Bottom of boring 15.0 feet	Not analyzed
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
25						
27						
28						
29						
30						

BL-248 Modified

PROJECT: Kaiser Oakland	Log of Boring No. B4
BORING LOCATION: Near mechanical building	ELEVATION AND DATUM
DRILLING CONTRACTOR: HEW Drilling	DATE STARTED: 11/13/89 / DATE FINISHED: 11/13/89
DRILLING METHOD: 6" Hollow Stem Auger	TOTAL DEPTH: 10.0 Feet / MEASURING POINT
DRILLING EQUIPMENT: CME 45B	DEPTH TO WATER: FIRST -- / COMPL. -- / 24 HRS. --
SAMPLING METHOD: 2"/4" split spoon	LOGGED BY: D.R. Wuthrich
HAMMER WEIGHT: 140 Lbs. / DROP: 30"	RESPONSIBLE PROFESSIONAL: J.D. Gallinatti / REG. NO.: CEG #1335

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION (NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.)	ANALYTICAL RESULTS
					Surface Elevation:	
0					2" Asphalt cover over 8" base rock	
1			16			
2	B-4 1-1				CLAY with SAND (CL) Brown (7.5 YR 5/4), laminated clay with little angular sand, soft, damp	BTX&E: ND TPH: NC
3						
4			31		Mottled, trace fine sand	
5	B-4 2-1					BTX&E: ND TPH: ND
6						
7					Laminated, trace very fine sand, becoming harder	
8						
9					Clay with trace fine sand, stiff, moist	
10	B-4 3-1		80			Not analyzed
					Bottom of boring 10.0 feet	
11						
12						
13						
14						

BL-1-89/Mod.frec

Geomatrix Consultants	Project No. 1459B	Figure 5

PROJECT: Kaiser Oakland		Log of Boring No. B5	
BORING LOCATION: Near mechanical building		ELEVATION AND DATUM	
DRILLING CONTRACTOR: HEW Drilling		DATE STARTED: 11/13/89	DATE FINISHED: 11/13/89
DRILLING METHOD: 6" Hollow Stem Auger		TOTAL DEPTH: 10.0 Feet	MEASURING POINT
DRILLING EQUIPMENT: CME 45B		DEPTH TO WATER: FIRST --	COMPL. -- / 24 HRS. --
SAMPLING METHOD: 2"/4 split spoon		LOGGED BY: D.R. Wuthrich	
HAMMER WEIGHT: 140 Lbs.	DROP: 30"	RESPONSIBLE PROFESSIONAL: J.D. Gallinatti	REG. NO.: CEG #1335

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION (NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.)	ANALYTICAL RESULTS
					Surface Elevation:	
0					2" Asphalt cover over 8" base rock	
1			32		CLAY (CH) Light brown (7.5YR 6/4), laminated clay with fine angular sand, stiff, moist, upper 1/2' is a fine, angular, damp sand (SP)	
2	B-5 1-1					BTX&E: ND TPH: ND
3						
4			27		Trace sand, manganese (?) staining	
5	B-5 2-1					Not analyzed
6						
7						
8						
9			52		Very stiff, laminated clay with trace angular sand	
10	B-5 3-1					Not analyzed
					Bottom of boring 10.0 feet	
11						
12						
13						
14						

BL-1-88 Vocl.ec

PROJECT: Kaiser Oakland	Log of Boring No. B6
BORING LOCATION: Near mechanical building	ELEVATION AND DATUM:
DRILLING CONTRACTOR: HEW Drilling	DATE STARTED: 11/13/89 / DATE FINISHED: 11/13/89
DRILLING METHOD: 6" Hollow Stem Auger	TOTAL DEPTH: 15.0 Feet / MEASURING POINT:
DRILLING EQUIPMENT: CME 45B	DEPTH TO WATER: FIRST -- / COMPL. -- / 24 HRS. --
SAMPLING METHOD: 2" split spoon/4" split spoon	LOGGED BY: D.R. Wuthrich
HAMMER WEIGHT: 140 Lbs. / DROP: 30"	RESPONSIBLE PROFESSIONAL: J.D. Gallinatti / REG. NO.: CEG #1335

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION (NAME (USCS Symbol): color, moist., % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.)	ANALYTICAL RESULTS
					Surface Elevation:	
0					2" Asphalt cover over 10" base rock	
1			12		SAND (SP) Dark yellowish brown (10YR 4/4), loose sand, dry, fine to medium, angular	
2	B-6 1-1					BTX&E: ND TFH: ND
3						
4			18			
5	B-6 2-1				With rare clasts to 1/4", wet	
6					CLAY (CL) Yellowish brown (10YR 5/4), medium stiff, damp, laminated with trace fine sand	BTX&E: ND TFH: 29 mg/kg (diesel)
7						
8						
9			69			
10	B-6 3-1				Stiff, trace fine sand	BTX&E: ND TFH: ND
11						
12						
13						
14						

BL-1-ES Modified

Geomatrix Consultants	Project No. 14598	Figure 7

PROJECT:
Kaiser Oakland

Log of Boring No. B6 (cont'd.)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	LITHOLOGY	DESCRIPTION: NAME (USCS Symbol): color, moist, % by wt., plast., density, structure, cementation, react. w/HCl, geo. inter.	ANALYTICAL RESULTS
15	B-6 4-1		53		Bottom of boring 15.0 feet	Not analyzed
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
26						
27						
28						
29						
30						

BL-2-89/Modified

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-11-355

Received: 13 NOV 89
Reported: 15 NOV 89

Ms. Cheri Young
Geomatrix Consultants
1 Market Plaza, Spear Tower, Ste.717
San Francisco, California 94105

Project: 1459A

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
11-355-1	B1-1-3	13 NOV 89
11-355-2	B1-2-1	13 NOV 89
11-355-3	B2-1-1	13 NOV 89
11-355-4	B2-2-2	13 NOV 89
11-355-5	B2-3-2	13 NOV 89

PARAMETER	11-355-1	11-355-2	11-355-3	11-355-4	11-355-5
TPH and BTEX - Modified 8015					
Date Analyzed	11.14.89	11.14.89	11.14.89	11.14.89	11.14.89
Dilution Factor, Times	1	1	1	1	1
Benzene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Ethylbenzene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Total Xylene Isomers, mg/kg	<0.3	<0.3	<0.3	<0.3	0.4
Total Fuel Hydrocarbons, mg/kg	<10	<10	<10	15	80
Fuel Characterization, .	---	---	---	M.SPIRITS	M.SPIRITS

This Fuel charaterization is a qualitative identification based upon a visual comparison of sample chromatograms with those from authentic standards.

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-11-355

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Reported: 15 NOV 89

Ms. Cheri Young
Geomatrix Consultants
1 Market Plaza, Spear Tower, Ste.717
San Francisco, California 94105

Project: 1459A

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
11-355-6	B2-4-2	13 NOV 89
11-355-7	B3-1-1	13 NOV 89
11-355-8	B4-1-1	13 NOV 89
11-355-9	B5-1-1	13 NOV 89
11-355-10	B6-1-1	13 NOV 89

PARAMETER	11-355-6	11-355-7	11-355-8	11-355-9	11-355-10
TPH and BTEX - Modified 8015					
Date Analyzed	11.14.89	11.14.89	11.14.89	11.14.89	11.14.89
Dilution Factor, Times	1	1	1	1	1
Benzene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Ethylbenzene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Total Xylene Isomers, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Total Fuel Hydrocarbons, mg/kg	<10	<10	<10	<10	<10
Other TPH and BTEX - Modified 8015	---	---	---	---	---

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-11-355

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Reported: 15 NOV 89

Ms. Cheri Young
Geomatrix Consultants
1 Market Plaza, Spear Tower, Ste.717
San Francisco, California 94105

Project: 1459A

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
11-355-11	B1-4-1	13 NOV 89
11-355-12	B3-2-1	13 NOV 89
11-355-13	B3-3-1	13 NOV 89
11-355-14	B3-4-2	13 NOV 89
11-355-15	B4-3-1	13 NOV 89

PARAMETER	11-355-11	11-355-12	11-355-13	11-355-14	11-355-15
Sample Held, Not Analyzed	HELD	HELD	HELD	HELD	HELD

BROWN AND CALDWELL LABORATORIES

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Geomatrix Consultants
1 Market Plaza, Spear Tower, Ste.717
San Francisco, California 94105

Project: 1459A

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
11-355-16	B5-2-1	13 NOV 89
11-355-17	B6-4-1	13 NOV 89
11-355-18	B1-3-1	13 NOV 89
11-355-19	B6-2-1	13 NOV 89
11-355-20	B6-3-1	13 NOV 89

PARAMETER	11-355-16	11-355-17	11-355-18	11-355-19	11-355-20
Sample Held, Not Analyzed	HELD	HELD	HELD	---	---
TPH and BTEX - Modified 8015					
Date Analyzed	---	---	---	11.14.89	11.14.89
Dilution Factor, Times	---	---	---	1	1
Benzene, mg/kg	---	---	---	<0.3	<0.3
Ethylbenzene, mg/kg	---	---	---	<0.3	<0.3
Toluene, mg/kg	---	---	---	<0.3	<0.3
Total Xylene Isomers, mg/kg	---	---	---	<0.3	<0.3
Total Fuel Hydrocarbons, mg/kg	---	---	---	29	<10
Fuel Characterization,	---	---	---	DIESEL	---

This Fuel characterization is a qualitative identification based upon a visual comparison of sample chromatograms with those from authentic standards.

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-11-355

Received: 13 NOV 89
Reported: 15 NOV 89

Ms. Cheri Young
Geomatrix Consultants
1 Market Plaza, Spear Tower, Ste.717
San Francisco, California 94105

Project: 1459A

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
11-355-21	B5-3-1	13 NOV 89
11-355-22	B4-2-1	13 NOV 89

PARAMETER	11-355-21	11-355-22
Sample Held, Not Analyzed	HELD	---
TPH and BTEX - Modified 8015		
Date Analyzed	---	11.14.89
Dilution Factor, Times	---	1
Benzene, mg/kg	---	<0.3
Ethylbenzene, mg/kg	---	<0.3
Toluene, mg/kg	---	<0.3
Total Xylene Isomers, mg/kg	---	<0.3
Total Fuel Hydrocarbons, mg/kg	---	<10
Other TPH and BTEX - Modified 8015	---	---

Sim D. Lessley, Ph.D. / Laboratory Director

GEOMATRIX CONSULTANTS
ONE MARKET PLAZA
SPEAR STREET TOWER SUITE 717
SAN FRANCISCO, CALIFORNIA 94105
(415) 957-9557

Chain of Custody Record

DATE 11/13/89 PAGE ____ OF ____

PROJECT NO. 1459A

SAMPLERS: (SIGNATURE)

DATE	TIME	SAMPLE NUMBER	GENERAL MINERAL	PRIORITY POLLUTANT METALS	EPA METHOD 624	EPA METHOD 625	EPA METHOD 601	EPA METHOD 602	EPA METHOD 608	PETROLEUM HYDROCARBONS		mod. BDIS			NUMBER OF CONTAINERS
11/13		B1-1-1 / B1-2-1										X			2
11/13		B1-4-1 / B1-3-1										Hold			2
11/13		B2-1-1 / B2-2-2										X			2
11/13		B2-3-2 / B2-4-2										X			2
11/13		B3-1-1										X			1
11/13		B3-2-1 / B3-3-1 / B3-4-2										Hold			3
		B4-1-1 / B4-2-1										X			2
11/13		B4-3-1										Hold			1
11/13		B5-1-1										X			1
11/13		B5-2-1 / B5-3-1										Hold			2
11/13		B6-1-1 / B6-2-1 / B6-3-1										X			3
11/13		B6-4-1										Hold			1

REMARKS
(SAMPLE PRESERVATION, HANDLING PROCEDURES, OBSERVATIONS, ETC.)

- 48 hr turnaround,
- results to Cheri Young
- quantify mineral spirits & BTX & E
- Attn: Chi Hsau Ho

TOTAL NUMBER OF CONTAINERS 22

RELINQUISHED BY:	DATE	RECEIVED BY:	RELINQUISHED BY:	DATE	RECEIVED BY: (LAB)
SIGNATURE		SIGNATURE	SIGNATURE: Dennis Wuthrich	11/13	SIGNATURE: KATHI FLORES
PRINTED NAME	TIME	PRINTED NAME	PRINTED NAME: Geomatrix	TIME: 1855	PRINTED NAME: BCA
COMPANY		COMPANY	COMPANY		LABORATORY

RELINQUISHED BY:	DATE	RECEIVED BY:	METHOD OF SHIPMENT:
SIGNATURE		SIGNATURE	LABORATORY COMMENTS / OBSERVATIONS
PRINTED NAME	TIME	PRINTED NAME	Log # 891355
COMPANY		COMPANY	

DISTRIBUTION: WHITE, CANARY - LABORATORY, PINK - ORIGINATOR