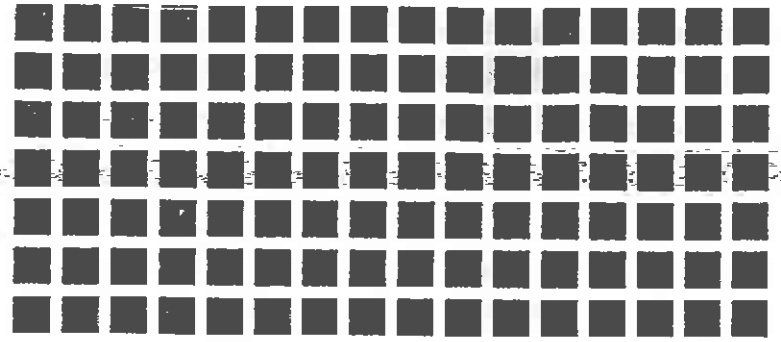
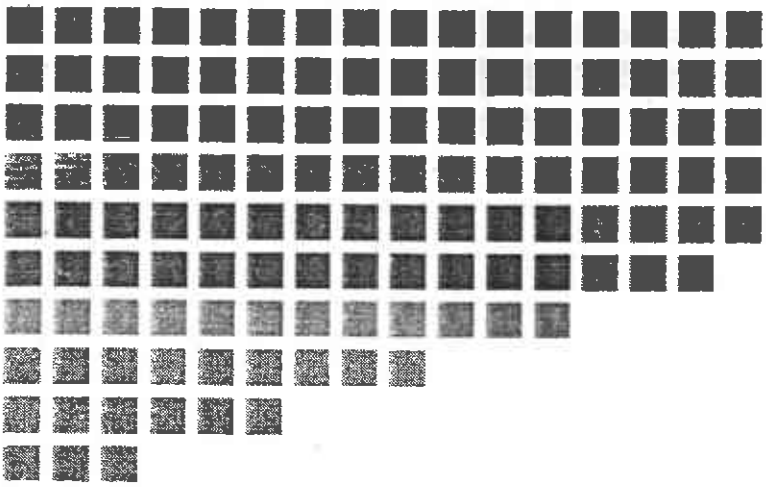


PRELIMINARY HYDROCARBON CONTAMINATION ASSESSMENT
800 CENTER STREET
OAKLAND, CALIFORNIA
SCI 272.012



10-13-89

■ Subsurface Consultants, Inc.

PRELIMINARY HYDROCARBON CONTAMINATION ASSESSMENT
800 CENTER STREET
OAKLAND, CALIFORNIA
SCI 272.012

Prepared for:

City of Oakland
1417 Clay Street, 3rd Floor
Oakland, California 94612

by:

R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/92)

James P. Bowers by proxy
James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

October 13, 1989

I INTRODUCTION

This report presents the results of our preliminary hydrocarbon contamination assessment at 800 Center Street in Oakland, California. The location of the site with respect to adjacent streets is shown on the Site Plan, Plate 1.

In brief, the site was previously used as a gasoline station and automobile repair garage. We understand that the City of Oakland is considering purchasing the property for redevelopment. The purpose of our study was to assess whether contamination is present on the property.

The scope of our services included reviewing aerial photographs of the site to identify probable tank locations, drilling test borings, obtaining soil and groundwater samples, and performing analytical tests. Based on the data generated, we were to develop conclusions and/or recommendations regarding:

1. Subsurface conditions,
2. The presence and concentrations of the contaminants in the samples tested, and
3. The significance of the contaminant levels with respect to state and local regulatory criteria.

II SITE RESEARCH

Prior to conducting our field investigation, we reviewed available data in an attempt to identify historic tank locations. Our research included visiting the City of Oakland Building Department to review available files on the property, and reviewing aerial photographs. Our research indicated the following:

September 1931, Building Permit issued to construct a gasoline service station

August 1953, Pacific Aerial photograph AV 19-08-28 and 29, photograph shows active gasoline service station

June 22, 1973, permit issued to remove four, 1000 gallon underground tanks. Tank excavation located 4 feet inside the curb line along Center Street

April 24, 1973, Pacific Aerial photograph AV 1100-05, 15 and 16, shows abandoned gasoline station, tank excavation visible along Center Street

March 30, 1988, Pacific Aerial Surveys aerial photograph 3268-4 and 5, shows no significant changes since 1973 photograph

III SURFACE CONDITIONS

The site is situated at the northeast corner of 8th and Center Streets. It is essentially rectangular and has about 90 feet of frontage along Center Street and about 75 feet of frontage along 8th Street. A wood-frame structure exists at the

northeast corner of the site. A hydraulic cylinder automotive lift is located within the building. Just south of the building, there is a concrete slab area, with plan dimensions of approximately 20 by 24 feet. The slab slopes toward a sump, which apparently discharges into the sanitary sewer. The sump contains an oily waste. A gasoline station pump island exists near the southwest corner of the property. A backfilled excavation which apparently contained the previous underground storage tank(s) is located in the area shown on the Site Plan. The majority of the site is paved with asphalt concrete.

IV FIELD EXPLORATION

Subsurface conditions at the site were investigated by drilling 5 test borings, ranging from 4-1/2 to 27 feet deep. Test Borings 1 and 2 were located within the previous tank excavation backfill. Boring 3 was located adjacent to the existing sump. Boring 4 was located adjacent to the pump island, in an area estimated to be downgradient of the previous tanks. Test Boring 5 was located adjacent to the hydraulic cylinder within the building. Borings 1 through 4 were drilled using truck-mounted, 8-inch-diameter hollow-stem auger drilling equipment. Boring 5 was drilled using a hand sampling device.

The drilling and sampling equipment were steam cleaned prior to each use. Soil cuttings generated during drilling were placed in steel drums for later disposal.

Our engineer/geologist observed drilling operations and prepared logs of the soils encountered. Undisturbed soil samples were obtained at 3 to 5 foot intervals. The samples were obtained in brass liners. Aluminum foil sheets were placed over the ends of the liners prior to capping, taping and labelling. The samples were screened on-site, using a field organic vapor analyzer (OVA). The OVA readings are shown on the boring logs at the appropriate depths. The samples were refrigerated until delivery to the analytical laboratory. The samples were accompanied by Chain-of-Custody Records, copies of which are attached.

A temporary groundwater monitoring well was installed in Borings 1 and 3 during drilling. The wells consisted of 2-inch-diameter machine slotted PVC pipe. The pipe was joined by threads (no gluing or riveting). The wells extended about 10 feet below the groundwater level measured during drilling. The wells were developed by removing water until the discharge became relatively clear. The water removed was placed in steel drums for later disposal.

A groundwater sample was obtained from each well using a Teflon sampler. The sampler was steam cleaned prior to its use. A sample of the sludge from the sump was also obtained using a steam-cleaned stainless steel ladle. The water and sludge samples were placed in pre-cleaned sample containers. The samples remained refrigerated until delivery to the analytical

laboratory. The samples were accompanied by Chain-of-Custody Records, copies of which are attached.

V ANALYTICAL TESTING

Soil, groundwater and sludge samples were analytically tested by Curtis & Tompkins, Ltd., a State of California Department of Health Services (DHS) certified laboratory for the tests performed. Selected samples were analytically tested for:

1. **Total Extractable Hydrocarbons** (TEH), sample preparation and analysis using EPA Methods 3550 (sonication) and 8015 modified (gas chromatograph, coupled to a flame ionization detector), diesel

2. **Total Volatile Hydrocarbons** (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), gasoline

3. **Benzene, Toluene, Xylene and Ethylbenzene** (BTXE), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8020/602 (gas chromatograph coupled to a flame ionization detector),

4. **Total Oil and Grease** (TOG), sample preparation and analysis using EPA Methods 3550 (solvent extraction) and SMWW 503E (gravimetric determination),

5. **Semi-Volatile Organics**, sample preparation and analysis using EPA Methods 3580 (waste dilution) and 8270 (gas chromatograph with mass spectroscopy),

6. **Volatile Organics**, sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8240/624 (gas chromatograph with mass spectroscopy), and

7. **Heavy Metals**, sample preparation using EPA Method 3050 (digestion), analysis using EPA 6010 for cadmium, chromium and zinc and EPA 7420 for lead.

The results of the analytical tests on the soil, sump sludge and groundwater samples are presented below.

Table 1. SOIL ANALYSES

Boring No.	Sample Depth (feet)	Total Petroleum Hydrocarbons (ppm)[1] TVH	TEH[2]	Benzene (ppm)	Toluene (ppm)	Ethyl-Benzene (ppm)	Total Xylenes (ppm)
1	10	2100	6800	50	220	46	240
1	15	2400	NT	32	200	60	290
2	7	4100	14000	50	450	130	540
2	11.5	31000	NT[3]	500	2800	760	3700
3	10.5	100	ND	ND[4]	2	2	7
3	12.5	950	220	ND	44	32	130
4	7.5	5400	5100	57	250	140	610
4	10.5	5800	NT	92	360	1100	670

Boring No.	Depth feet	TOG (ppm)	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Zinc (ppm)
3	3.5	ND	0.7	18	18	19
5[5]	3.5	16,000	NT	NT	NT	NT

[1] Parts per million
[2] As gasoline
[3] NT = not tested
[4] ND = Not detected, see analytical test reports for detection limits
[5] Boring 5 identified as HA on Laboratory Test Reports

Table 2. GROUNDWATER ANALYSES

Boring No.	TVH (ppm)	TEH (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-Benzene (ppm)	Total Xylenes (ppm)	Other EPA 624 Chemicals (ppm)
1	2600	ND	13	41	22	140	NT
3	43	ND	0.34	4.2	1.1	2.5	ND

solid

Table 3. SUMP WASTE ANALYSES

Test	Concentration (ppb)[1]
Volatile Organics (EPA 8240)	ND
Semi Volatile Organics (EPA 8270)	
Pyrene	32,000 ppb or 32 ppm
Butylbenzylphthalate	21 ppm (mg/kg)
Other (EPA 8270 chemicals)	ND

Selected Heavy Metals	Concentration (ppm)[4]	TTLC (ppm)	STLC[3] (ppm)
Cadmium	2.2	100	1
Chromium	10	2500	560
Lead	haz waste [redacted]	1000	5
Zinc	180	5000	250

Cl pesticides ND

1 Parts per billion
2 Total Threshold Limit Concentration
3 Soluble Threshold Limit Concentration
4 Parts per million

VI SUBSURFACE CONDITIONS

Our test borings indicate that the site is blanketed by about 6 to 8 feet of silty sand fill, which contains varying amounts of wood, brick, metal and other debris. The fill is underlain by medium dense to dense silty and clayey sands which extend to the maximum depth explored, about 26 feet.

Groundwater was encountered in the test borings at depths of 11 to 13 feet during drilling. The borings were backfilled before stabilized groundwater levels were measured.

VII DISCUSSION AND CONCLUSIONS

The analyses indicate that significant soil and groundwater contamination exists at the site. The contaminants consist primarily of gasoline and its volatile aromatic constituents, i.e., BTXE. Gasoline concentrations in soil samples situated just above groundwater were up to 31,000 ppm. Concentrations up to 14,000 ppm of gasoline were encountered several feet above groundwater near the previous tank site.

The analyses indicate that groundwater has been impacted, in that substantial concentrations of gasoline and BTXE were detected. Although the temporary monitoring wells were not left in place long enough to measure free product thicknesses, the

elevated gasoline concentrations in soil just above groundwater suggest that free product likely does exist.

The boring near the hydraulic cylinder lift indicates that the cylinder has leaked hydraulic oils into the soil surrounding the lift. It is not known whether the hydraulic oil contamination extends to groundwater.

Analytical tests conducted on the oily waste from the sump indicate that it contains elevated concentrations of lead and several EPA 8270 chemicals. Hence, it should be handled, transported and disposed of as a hazardous waste. Was it? Analyses conducted on soil samples adjacent to the sump suggest that significant leakage from the sump has not occurred.

Where groundwater has or potentially could be impacted, the Regional Water Quality Control Board (RWQCB) requires that an investigation be conducted to (1) define the horizontal and vertical extent of soil and groundwater contamination both on and off site, and (2) evaluate remedial action alternatives. Generally, soil containing greater than 100 ppm of petroleum hydrocarbons, (i.e. TVH, TEH and TOG) will require remediation. In addition, it will likely be necessary to remove free product from the groundwater surface. Groundwater extraction and treatment will likely be necessary to remediate the BTXE contamination.

In accordance with Section 13260 of the California State Water Code regarding waste discharge requirements, we recommend that the owner of the property submit a copy of this report to the following agencies:

Mr. Dennis Byrne
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Mr. Lester Feldman
San Francisco Bay Regional Water Quality
Control Board
1111 Jackson Street, Room 6040
Oakland, California 94607

GARAGE

SUMPS

3

5

HYDRAULIC CYLINDER LIFT

RESTROOMS

2

APPROXIMATE PREVIOUS TANK LOCATION

1

4

PUMP ISLAND

SIDEWALK

CENTER STREET

EIGHTH STREET

VICINITY MAP

N

TEST BORING

FENCE

APPROXIMATE SCALE (feet)

0 10 20

SITE PLAN

Subsurface Consultants

CENTER STREET - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
272.012	9/19/89	RWP

PLATE 1

LOG OF TEST BORING 1

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 8/18/89
ELEVATION --

LABORATORY TESTS TVH (ppm)	TEH (ppm)	OVA (ppm)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
		0	0		20	BROWN CLAYEY SILTY (ML) stiff, dry, contains metal fragments
		16			17	BROWN SILTY SAND (SM) loose, moist (fill)
		95			10	
		OR	5		8	GRAY-GREEN SILTY SAND (SM) medium dense, moist
		OR			19	
					26	
2100	6800	OR	10		23	GROUNDWATER LEVEL DURING DRILLING
					23	
		OR			17	becomes clayey
2400	NT	OR	15		11	
		OR			10	
		OR			24	BROWN CLAYEY SAND (SC) medium dense, wet
		423	20		22	BROWN SILTY SAND (SM)
		336			65	dense, wet
		43			57	
		36			56	
			25		51	
			30			
			35			
			40			

TEH = Total Extractable Hydrocarbons
TVH = Total Volatile Hydrocarbons
TOG = Total Oil and Grease
NT = Not Tested
ND = Not Detected
OVA = Organic Vapor Analyzer
OR = Over Range (> 2000 ppm)

SAMPLER TYPE:
CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

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CENTER STREET, OAKLAND, CA

JOB NUMBER	DATE	APPROVED
272.012	9/18/89	

PLATE 2

LOG OF TEST BORING 2

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 8/18/89
ELEVATION --

LABORATORY TESTS TVH (ppm)	TEH (ppm)	OVA (ppm)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
		45	0		7	BROWN CLAYEY SILT (ML) medium stiff, dry, contains brick fragments (fill)
		700			5	DARK BROWN SILTY SAND (SM) loose, moist, (fill)
		500			6	
			5		8	GRAY-GREEN SILTY SAND (SM) medium dense, moist (fill)
4100	14000	OR			26	
		OR			34	
			10		35	
		OR				
31000	NT				30	BROWN SILTY SAND (SM) medium dense, wet
		OR			17	
		OR				
			15		10	
		400			10	thin layer of black oily material at 16 feet
						BROWN GRAY SAND (SP) dense, wet
			20			
		310			64	
			25			
		43			87	
			30			
			35			
			40			

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	JOB NUMBER	DATE	APPROVED	3
	272.012	9/18/89		

LOG OF TEST BORING 3

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 8/18/89

ELEVATION --

LABORATORY TESTS TVH (ppm)	TEH (ppm)	TOG (ppm)	OVA (ppm)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
				0			CONCRETE - 6" thick
						2	BRICK
			7.2			4	BROWN SILTY SAND (SM) loose, moist, brick and concrete fragments (fill)
		ND					
			3.5	5		6	
			350			14	
						26	REDDISH-BROWN CLAYEY SAND (SC) medium dense, moist
			250			38	
			OR	10			
100	ND		OR			34	
950	220		OR		▼	28	GROUNDWATER LEVEL ENCOUNTERED DURING DRILLING 8/18/89
			OR			21	
			54	15		16	
						10	BROWN CLAYEY SAND (SC) medium dense, wet
				20			
			47			58	
							BROWN SILTY SAND (SM) dense, wet
				25			
			0			66	
				30			
				35			
				40			

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JOB NUMBER 272.012 | DATE 9/18/89 | APPROVED

PLATE 4

LOG OF TEST BORING 4

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 8/18/89
ELEVATION --

LABORATORY TESTS TVH (ppm)	LABORATORY TESTS TEH (ppm)	OVA (ppm)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
			0			ASPHALT - 2" thick BASE ROCK - 1" thick
		14			9	BROWN SILTY SAND (SM) loose, moist (fill)
		750			10	
		43	5		19	REDDISH BROWN SILTY SAND (SM) medium dense, moist
5400	5100	OR			33	
		OR			29	
		OR	10		33	free product noted
5800	NT				35	
		OR	▼			GROUNDWATER LEVEL ENCOUNTERED DURING DRILLING 8/18/89
					19	
		OR			22	
		OR	15		12	RED BROWN CLAYEY SAND (SC) medium dense, wet
		420	20		30	
		65	25		49	
			30			
			35			
			40			

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PLATE 5

LOG OF TEST BORING 5

EQUIPMENT Hand Sampler

DATE DRILLED 8/18/89

ELEVATION --

LABORATORY TESTS	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
TOG (ppm)				
16000	0			DARK CLAYEY SAND (SC) medium dense, moist
	5			
	10			
	15			

Subsurface Consultants	CENTER STREET, OAKLAND, CA			PLATE
	JOB NUMBER 272.012	DATE	APPROVED	6

GENERAL SOIL CATEGORIES			SYMBOLS	TYPICAL SOIL TYPES
COARSE GRAINED SOILS More than half is larger than No. 200 sieve	GRAVEL More than half coarse fraction is larger than No. 4 sieve size	Clean Gravel with little or no fines	GW	Well Graded Gravel, Gravel-Sand Mixtures
			GP	Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM	Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC	Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND More than half coarse fraction is smaller than No. 4 sieve size	Clean sand with little or no fines	SW	Well Graded Sand, Gravelly Sand
			SP	Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM	Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC	Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS More than half is smaller than No. 200 sieve	SILT AND CLAY Liquid Limit Less than 50%		ML	Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
			CL	Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
			OL	Organic Clay and Organic Silty Clay of Low Plasticity
	SILT AND CLAY Liquid Limit Greater than 50%		MH	Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
			CH	Inorganic Clay of High Plasticity, Fat Clay
			OH	Organic Clay of Medium to High Plasticity, Organic Silt
HIGHLY ORGANIC SOILS			PT	Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

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CENTER STREET, OAKLAND, CA

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272.012	9/18/89	Rur

PLATE 7