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July 31, 1995
SCI 447.055

Mr. Jonathan Redding
Fitzgerald, Abbott & Beardsley
1221 Broadway, 21st Floor
Oakland, California 94604-2867

Response to Comments on Soil and Groundwater Investigations
3093 Broadway
Oakland, California

Dear Mr. Redding:

Presented herein is Subsurface Consultants, Inc. (SCI) response to comments presented in your letter dated June 13, 1995. SCI has been providing environmental engineering services at the site since the removal of three underground tanks in December 1989. SCI's services have been documented in the following reports:

"Environmental Engineering Services During Tank Removal," letter dated March 22, 1990

"Preliminary Hydrocarbon Contamination Assessment," report dated December 7, 1990

"Phase II Hydrocarbon Contamination Assessment," report dated June 3, 1991

"Phase III Hydrocarbon Contamination Assessment," report dated January 13, 1994

SUMMARY OF PREVIOUS INVESTIGATIONS AND SITE ACTIVITIES

Tank Removal

The former underground tanks contained gasoline, waste oil and diesel products. SCI obtained and analyzed samples following tank removal as directed by the Alameda County Health Care Services Agency (ACHCSA). Approximately 150 cubic yards of soil were removed from the tank pit. Oil and grease, Total Volatile Hydrocarbons, Total Extractable Hydrocarbons and BTEX were present in the soils left in-place. No other volatile organics other than BTEX were detected.

Preliminary Hydrocarbon Contamination Assessment

Five test borings were drilled in the tank vicinity to preliminarily evaluate the extent of soil contamination. One of the borings was completed as a groundwater monitoring well (MW-1) to evaluate impacts to groundwater. Analytical data indicated that gasoline impacted soils extend from below the bottom of the previous tank pit to groundwater. Impacted soils were encountered up to 35 feet away from the tank pit. In addition, free floating gasoline and elevated concentrations of dissolved gasoline range hydrocarbons, BTEX and DCA were present in groundwater.

Phase II Hydrocarbon Contamination Assessment

Six additional test borings were drilled and completed as groundwater monitoring wells (MW-2 through MW-7). Analytical data from the wells indicated the following:

- DCA appears to coincide with the free and dissolved gasoline plume. Hence, former gasoline releases appear to be the source of DCA
- The southerly extent of the plume has been defined by wells MW-2, MW-3, MW-5 and MW-7.
- The northerly contaminant boundary likely exists along the south side of Hawthorne Avenue.

Phase III Hydrocarbon Contamination Assessment

A. Interim Product Removal

In December 1991, SCI implemented free product recovery. Wells MW-1, MW-4 and MW-6 were initially pumped on a weekly basis with a bladder pump designed specifically to remove free product. Free product quantities were significant for a short period of time. When the quantities began to drop off, free product removal continued once a month by using a bailer. In March 1992, well MW-4 was no longer showing any product and the thickness of product in the other two wells had decreased significantly. It was concluded that the actual thickness of floating product was on the order of 1 inch, and that due to well hydraulics several inches of free product may accumulate in a given well.

Free product removal continued in the wells through November 1993. However, the amount of product being recovered did not justify continued removal. A summary of free product removal data is attached.

B. Additional Investigation

In October 1992, extensive investigations were conducted to further characterize the site in an attempt to determine preferential flow pathways. Seventeen (17) areas were investigated using cone penetrometer testing (CPT) equipment. Based on the stratigraphy encountered in numerous test borings and the CPT holes it is evident that the site is underlain by an alluvial fan deposit comprised of interbedded lenses of silt, sand, gravel and clay. Preferential flow is occurring within the sand and gravel layers.

In October and November 1992 five additional wells (MW-8 to MW-11 and MW-13) were installed. (There is not a well designated MW-12.) Wells MW-8 and MW-10 were completed as 6 inch diameter wells and the others were completed as 2 inch diameter monitoring wells. Controlled pump tests were performed in well MW-8 and MW-10. The tests indicated that preferential flow exists within the coarse grained deposits which exist beneath the site. The effect of pumping from Well MW-10, which has a well graded sandy gravel present at the groundwater surface, was observed up to 200 feet away in wells in which coarse-grained soils were also present at the groundwater surface. Pumping from Well MW-8 which penetrates predominately fine grained soils did not effect water levels in adjacent wells.

The study further indicated that the plume is primarily localized to the site. The downgradient extent does not extend across Broadway. In addition, since SCI's studies began in 1991, it does not appear that the plume has migrated measurably during the study. There is also the possibility that the site is being impacted by an off-site, up gradient source.

RESPONSE TO SPECIFIC QUESTIONS RAISED BY ACHCSA

Response to Issues 1 and 2 - Free Product Removal and Groundwater Monitoring

Free product recovery and groundwater monitoring have not been performed since November 1993. Eight of the wells (MW-2, MW-3, MW-5, MW-7, MW-8, MW-9, MW-10, MW-11) were monitored on a quarterly basis from November 1992 through 1993. Wells in which free product was detected (MW-1, MW-4, and MW-10) were monitored during some of those events. Well MW-6 was obstructed during this time frame, however the obstruction was later removed. The locations of the wells and the previous tank area are shown on the Site Plan, Plate 1.

Based on the groundwater monitoring data presented in the attached Table, we conclude that the primary contaminants of concern are related to former gasoline and possibly diesel releases (i.e. TPH gas, TPH diesel, BTEX, and DCA as a gasoline additive). This data includes a year of quarterly monitoring for most of the wells.

SCI proposes to re-implement a monitoring program directed at the contaminants of concern identified at the site. In addition, the eleven wells will be checked for free product on a quarterly basis. All wells in which free product is detected will be purged of free product using a bladder pump or bailer. The amount of free product recovered will be recorded and reported quarterly to the ACHCSA. Wells which do not contain free product will be purged and sampled. Samples from these wells will be analyzed for TPH gas, TPH diesel, BTEX, and DCA. Wells which contain free product will be purged and sampled on an annual basis for these same target constituents.

In addition to the tests indicated above, water samples from the well immediately downgradient from the former tank pit (MW-1) will be analyzed for TPH oil and semi-volatile organics. Previously, water from the tank pit and water from well MW-1 did not contain detectable concentrations of Total Oil & Grease (SMWW 17:5520). Further, analytical data generated during tank removal and during the soil investigations do not indicate the presence of waste oil constituents in groundwater. Our recommendations regarding the need for future additional analyses for TPH oil and semi-volatile organics will be based on the test results from well MW-1.

Response to Issue 3 - Groundwater Elevations

Groundwater depth measurements will continue to be recorded during monitoring events, as has been done for all previous monitoring events. On a quarterly basis, groundwater elevations will be computed and summarized in a table along with historical groundwater level data. The groundwater gradient for each event will be determined and presented graphically as a groundwater elevation contour map. Groundwater measurements and gradient information will be presented in the quarterly reports. It should be noted that based upon the studies to date, sufficient data exists to project confidently the groundwater flow direction and gradient at the site.

Response to Issue 4 - Stockpiled soils

Approximately 150 to 200 cubic yards of soil originating from tank removal and subsequent drilling activities are stockpiled in an asphalt covered area on-site. The stockpiled soils were fully characterized in 1991. However, the data is too old to be acceptable to disposal facilities for landfill acceptance. As a result the stockpile will be resampled and supplemental analytical tests will be performed as required by the landfills. SCI will submit the characterization results to selected landfills for acceptance.

Response to Issue 5 - Remediation Plan

A remediation plan has not been developed for the site. A dual phase soil vapor and groundwater extraction system is currently expected to be a possible remedial alternative. We have recommended to our client that a soil vapor extraction system (SVES) test be the next step in the remedial design process. Following the SVES test a remediation plan should be prepared.

Response to Issue 6 - Investigation and Remediation Schedule

A complete schedule of investigation and remediation cannot be determined at this time, since the client's ability to authorize the proposed activities depends upon the results of further studies, selection of alternatives and cash flow considerations. An approximate schedule of steps proposed through 1995 is presented below:

Item	Estimated Submittal Date
August 1995 Groundwater Monitoring Report	September 15, 1995
Soil Stockpile Characterization	September 29, 1995
SVES Test Work Plan	October 20, 1995
Nov. 1995 Groundwater Monitoring Report	January 2, 1996
SVES Test Report and Recommendations	January 12, 1996

Provided that funding is forthcoming, a remediation plan can be prepared and implemented in 1996. An updated remediation schedule will be submitted in early 1996.

Response to Issue 7 - Site Safety Plan

A site specific safety plan for soil and groundwater monitoring is attached.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Jeriann N. Alexander
Civil Engineer 40469 (expires 3/31/99)

JNA:sld

7 copies: Mr. Jonathan Redding

Attachments: Site Plan
Tables 1, 2 & 3
Site Safety Plan

Table 1.

SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER FROM MONITORING WELLS

Well	Event Date	TVH ug/l	TEH ug/l	B ug/l	T ug/l	E ug/l	X ug/l	1,2 DCA ug/l	Other Purgeable Halocarbons ug/l
MW-1	Oct-90	620,000	<500	33,000	50,000	7,900	41,000	2,900	ND
	Oct-92	490,000	-	51,000	59,000	5,000	27,000	1,300	-
	Nov-92	320,000	4,600	35,000	43,000	4,200	22,000	1,600	ND
	Apr-93	270,000	25,000	50,000	58,000	4,600	25,000	1,800	ND
MW-2	Mar-91	<50	<50	<0.5	<0.5	<0.5	<0.5	ND	ND
	Nov-92	<50	<50	<0.5	1.1	<0.5	1.5	<1	ND
	Apr-93	<50	870	<0.5	<0.5	<0.5	<0.5	<1	ND
	Jul-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Nov-93	<50	240	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-3	Mar-91	<50	<50	<50	0.6	<0.5	<0.5	ND	ND
	Nov-92	50	160	<0.5	0.9	<0.5	2	<1	ND
	Apr-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Jul-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Nov-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-4	Mar-91	150,000	<500	20,000	38,000	2,800	14,000	610	ND
	Oct-92	230,000	-	15,000	32,000	2,500	14,000	430	-
	Nov-92	210,000	1,600	14,000	31,000	2,500	14,000	500	ND
MW-5	Mar-91	<50	<50	<0.5	<0.5	<0.5	<0.5	ND	ND
	Nov-92	<50	50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Apr-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Jul-93	<50	190	<0.5	<0.5	<0.5	<0.5	<1	ND
	Nov-93	<50	170	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-6	Mar-91	80,000	<50	12,000	13,000	1,100	5,400	1,400	Dibromochloro-
									methane (160)
	Oct-92	19,000	-	3,200	1,400	200	560	840	-
MW-7	Mar-91	<50	<50	<0.5	<0.5	<0.5	<0.5	ND	ND
	Nov-92	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Apr-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Jul-93	<50	150	<0.5	<0.5	<0.5	<0.5	<1	ND
	Nov-93	<50	200	<0.5	1	<0.5	1.7	<1	ND

Well	Event Date	TVH ug/l	TEH ug/l	B ug/l	T ug/l	E ug/l	X ug/l	1,2 DCA ug/l	Other Purgeable Halocarbons ug/l
MW-8	Oct-92	70	-	20	1	1	3	210	-
	Nov-92	<50	170	<0.5	<0.5	<0.5	<0.5	200	ND
	Apr-93	490	100	15	45	5.1	73	210	ND
	Jul-93	180	90	2.5	3	<0.5	1.9	350	ND
	Nov-93	310	170	23	<0.5	<0.5	<0.5	240	ND
MW-9	Nov-92	19,000	320	180	590	23	2000	340	Chloroform (15)
	Apr-93	2,300	920	48	4	0.6	13	600	Chloroform (2)
	Jul-93	2,300	450	170	8.1	15	<0.5	1100	ND
	Nov-93	4,400	450	69	7.3	21	9.7	900	ND
MW-10	Oct-92	28,000	-	2,700	3,800	210	1,300	150	-
	Nov-92	130,000	1,300	9,700	19,000	1,400	8,400	370	ND
	Apr-93	63,000	5,000	6,300	14,000	1,100	7,500	70	ND
	Jul-93	140,000	20,000	16,000	31,000	2,200	13,000	700	ND
MW-11	Nov-92	<50	220	<0.5	<0.5	<0.5	<0.5	<1	ND
	Dec-92	<50	140	<0.1	<0.1	<0.1	<0.1	-	-
	Dec-92	<50	120	<0.5	<0.5	<0.5	<0.5	-	-
	Apr-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Jul-93	160	150	<0.5	1.8	<0.5	<0.5	<1	ND
	Nov-93	80	60	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-13	Nov-92	<50	3,600	<0.5	<0.5	<0.5	<0.5	<1	ND
	Dec-92	<50	210	<0.1	<0.1	<0.1	<0.1	-	-
	Dec-92	<50	100	<0.5	<0.5	<0.5	<0.5	-	-
	Apr-93	<50	<50	<0.5	0.9	<0.5	<0.5	<1	ND
	Jul-93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
	Nov-93	<50	160	<0.5	<0.5	<0.5	<0.5	<1	ND

ug/l = micrograms per liter = parts per billion = ppb
MW1 was initially referred to as Sample 5
ND = None detected, chemicals not present at concentrations above detection limits reported on laboratory test reports
TVH = Total Volatile Hydrocarbons
TEH = Total Extractable Hydrocarbons
BTEX = Benzene, Toulene, Ethylbenzene, Xylene
DCA = 1,2-dichloroethane
<0.5 = Chemical not present at a concentration in excess of detection limit shown
- = Test not requested

Table 2.
SUMMARY OF CONTAMINANT CONCENTRATIONS
GRAB GROUNDWATER SAMPLES FROM BORING AND CPT HOLES

	TVH ug/l	TEH ug/l	B ug/l	T ug/l	E ug/l	X ug/l	1,2 DCA ug/l	Other Purgeable Halocarbons ug/l
B-12	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	ND
CPT 1	490	-	20	60	10	60	1	-
CPT 3	50	-	<0.4	<0.4	3	3	<4	-
CPT 4	1,100	-	60	50	80	15	110	-
CPT 5	600,000	-	2,300	53,000	8,000	43,000	730	-
CPT 7	1,700,000	-	40,000	120,000	25,000	120,000	2,900	-
CPT 9	2,100,000	-	49,000	140,000	28,000	145,000	620	-
CPT 10	190,000	-	13,000	16,000	3,900	18,000	1,400	-
CPT 11	2,000	-	200	50	30	70	11	-
CPT 12	130,000	-	4,100	10,000	2,600	10,000	9	-

ug/l = micrograms per liter = parts per billion = ppb

ND = None detected, chemicals not present at concentrations above detection limits reported on laboratory test reports

TVH = Total Volatile Hydrocarbons

TEH = Total Extractable Hydrocarbons

BTEX = Benzene, Toulene, Ethylbenzene, Xylene

DCA = 1,2-dichloroethane

<50 = Chemical not present at a concentration in excess of detection limit shown

- = Test not requested

Table 3

FREE PRODUCT RECOVERY

Well	Pumping Date	Product Removed (gallons)	Cumulative Product Removed (gallons)
1	12/23/91	2.0	2.0
	12/26/91	0.5	2.5
	1/13/92	1.0	3.5
	2/28/92	2.0	5.5
	4/3/93	0.0	5.5
	11/9/93	0.5	6.0
4	12/23/91	2.5	2.5
	12/26/91	6.0	8.5
	1/10/92	5.0	13.5
	2/28/92	4.0	17.5
	3/11/92	3.5	21.0
	3/13/92	3.5	24.5
	3/17/92	2.25	26.75
	3/18/92	2.5	29.25
	3/19/92	1.5	30.75
	3/23/92	4.0	34.75
	3/24/92	1.5	36.25
	3/25/92	1.0	37.25
	3/26/92	1.0	38.25
	3/27/92	0.5	38.75
	3/31/92	0.5	39.25
	4/1/92	0.25	39.50
	4/2/92	0.130	39.63
	4/6/92	0.130	39.76
	4/10/92	0.25	40.01
	4/13/92	0.25	40.26
	4/20/92	0.130	40.39
	5/4/92	0.130	40.52
	5/18/92	0.130	40.65
	5/26/92	0.130	40.78
	6/1/92	0.06	40.84
	6/29/92	0.25	41.09
	7/29/92	1.11	42.20
	8/28/92	1.68	43.88
	4/3/93	0.130	44.01
	11/9/93	0.03	44.04

Well	Pumping Date	Product Removed (gallons)	Cumulative Product Removed (gallons)
6	12/23/91	7.5	7.5
	12/26/91	2.0	9.5
	1/10/92	1.0	10.5
	2/4/92	2.0	12.5
	2/28/92	3.0	15.5
	3/10/92	2.75	18.25
	3/12/92	2.0	20.25
	3/30/92	0.5	20.75
	4/10/92	0.25	21.00
	4/13/92	0.13	21.13
	4/20/92	0.13	21.26
	5/4/92	0.13	21.39
	5/8/92	0.06	21.45
	5/26/92	0.13	21.58
	6/1/92	0.06	21.64
	6/29/92	0.19	21.83
	7/29/92	0.60	22.43
	8/28/92	2.4	24.83
	4/3/93	1.75	26.58
	11/9/93	0.83	27.41