Subsurface Consultants, Inc.

R. William Rudolph, P E
President

May 1, 1997
SCI 1039.002

SMD 1352

Ms. Juliet Shin
Senior Hazardous Materials Specialist
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

Response to Information/Revisions Request
Risk Based Corrective Action Assessment
Tank Area B
718 San Pablo Avenue
Albany, California

Dear Ms. Shin:

This letter responds to several comments provided by Alameda County Environmental Health Services (ACEHS) in your letter dated April 3, 1997, with regard to the above-referenced site. You requested that Subsurface Consultants, Inc. (SCI) provide some additional information and make some changes to the Risk Based Corrective Action analysis presented in SCI's report dated February 3, 1997. The results of these revisions show that the representative site concentrations obtained using an arithmetic mean do not exceed the Tier 2 site specific target levels (SSTLs) for the contaminants of concern. Each of ACEHS' comments are addressed below.

Equation used for obtaining the geometric mean:

The geometric mean for BTEX compounds was calculated using the Groundwater Services, Inc. (GSI) spreadsheet program and checked for accuracy using the following equation:

$$\text{Geometric Mean} = \sum_{i=1}^{n} \sqrt[n]{X_i * X_{i+1} * \ldots . X_n}$$

Rationale as to why the mean was considered applicable and accurate:

The geometric mean was considered to be applicable and accurate based on the statistical characteristics of the analytical data set (i.e., the variability/skewness of the data set). Upon review of the data, a marked decrease in contaminant concentrations was observed between samples collected from the former tank excavation sidewalls and samples collected from

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subsequent test borings outside and adjacent to the excavation limits. Based on these observations, it appears that impacts remaining in soil are limited to the area immediately adjacent to the tank excavation. Thus, a geometric mean was considered applicable and accurate for conditions at this site.

Equation used for obtaining the upper confidence limit (UCL):

The UCL was calculated using the GSI spreadsheet program.

Results of Tier 2 Risk Based Correction Action Assessment using a shallower vadose zone thickness and depth to water:

As discussed during our telephone conversation of March 20, 1997, groundwater level measurements obtained from monitoring well MW-3 were averaged to obtain the depth to the groundwater table (7.7 feet below grade). This value was input into the GSI spreadsheet model as the base of the vadose zone.

The ASTM spreadsheet program prepared by GSI does not utilize the depth to groundwater in calculations for soil volatilization to indoor or outdoor air. Thus, while the default depth of 300 cm is listed on the GSI worksheet, this value does not affect the risk calculations for these scenarios. Therefore, this default value for groundwater depth has not been changed.

However, it does affect soil scenarios.

As discussed in a follow-up telephone conversation with you on April 11, 1997, analytical results of existing sampling points to a depth of 10 feet below grade were considered representative of values within the zone of groundwater fluctuation. These sampling points include all the soil samples shown on Table A. As requested, representative site concentrations were recalculated by averaging the sampling points. The results are shown in Table B.

As illustrated in Table B, a comparison of Tier 2 results produced from the GSI spreadsheet program using the shallower vadose zone depth with the recalculated representative site concentrations shows that the representative site concentrations are below their respective SSTLs for a target risk level for commercial use of 1×10^{-5}.

Technical rationale for using the value of the length of affected soil parallel to wind and contaminated soil area:

Contaminated soil area

As described in the report, the contaminated soil area was defined as extending 5 feet beyond the original excavation limits. The original excavation areal extent was 12′ by 15′. However, four samples collected from borings SB-E and SB-F on the east side of the tank excavation limits

indicated no petroleum hydrocarbon impacts. Thus, assuming a 5-foot lateral extension from three sides of the excavation limits results in an areal extent of 17 feet by 25 feet, minus the original area which was excavated out. Therefore, the areal extent of impacted soils is (17x25) - (12x15) = 245 square feet or 2.3 x 10^5 square centimeters as shown in Output Table 1. See the attached sketch for visual clarification.

Length of affected soil parallel to wind

In general, the wind direction at the site is from the west to the east. Using the rationale for the contaminated soil area described above, a 17-foot length (rounded to 20 feet) was used for the length of affected soil parallel to wind. See the attached sketch for visual clarification.

Land use zoning:

The City of Albany Planning Department has indicated that the site, which lies adjacent to a commercial highway, is zoned for commercial use.

If you have any questions, please call either of the undersigned at (510) 299-7960.

Yours very truly,

Subsurface Consultants, Inc.

Meg Mendoza

Meg Mendoza
Project Engineer

Terence J. McManus
Associate Environmental Scientist

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Attachments: Table A
Table B
Tier 2 Worksheet
Output Table 1
Sketch of Contaminated Soil Area

cc: Mr. Jonathan Redding, Esq., Fitzgerald, Abbott & Beardsley LLP
Mr. Don Strough, Concord Honda/Pontiac

Table A
Representative Site Concentrations
Tank B Area
718 San Pablo Avenue, Albany
SCI 1039.002

Sample ID @ Depth (feet)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)
TB008 @ 7'	July 8, 1993	0.06	0.027	0.023	0.42
TB009 @ 8.5'	July 8, 1993	1.9	4.2	5.4	70
TB010 @ 9.5'	July 8, 1993	2.6	5.1	3.5	42
SB-E @ 5'	May 4, 1994	*0.0025*	*0.0025*	*0.0025*	*0.0025*
SB-E @ 10'	May 4, 1994	*0.0025*	*0.0025*	*0.0025*	*0.0025*
MW-3 (SB-F) @ 5'	May 4, 1994	*0.0025*	*0.0025*	*0.0025*	*0.0025*
MW-3 (SB-F) @ 10'	May 4, 1994	*0.0025*	*0.0025*	*0.0025*	*0.0025*
SB-G @ 5'	May 4, 1994	*0.0025*	*0.0025*	*0.0025*	*0.0025*
SB-G @ 10'	May 4, 1994	0.0086	0.024	0.083	1.2
AVERAGED VALUES (Arithmetic Mean)		**0.51**	**1.04**	**1.00**	**12.63**

NOTES:
mg/kg = milligrams per kilogram
italicized values = analyte not detected above laboratory reporting limit stated

Table B
Subsurface Soil Exposure Pathways
718 San Pablo, Albany
Tank B Area
SCI 1039.002

Constituents of Concern	Commercial Use, Risk Factor = 10^{-5} Site Specific Target Level for Constituents of Concern		Representative Onsite Concentration
	Volatilization to Indoor Air (mg/kg)	Volatilization to Outdoor Air (mg/kg)	(mg/kg)
Benzene	0.55	>Res	0.51
Ethylbenzene	>Res	>Res	1.00
Toluene	230	>Res	1.04
total Xylenes	>Res	>Res	12.63
Tetrachloroethene	1,600	150,000	0.24
1,1,1-Trichloroethane	570	>Res	0.49

Notes:
mg/kg = milligrams per kilogram
>Res = selected risk level cannot be reached or exceeded for that compound and the specified exposure scenario
Benzene has been corrected per CALEPA's more stringent requirements
Representative Onsite Concentrations for BTEX are the arithmetic mean of all sampling points listed on Table 1.
Representative onsite concentrations for tetrachloroethene and 1,1,1-trichloroethane are the maximum detected value

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 9.2**

Site Name: Val Strough Albany Ford
Site Location: 718 San Pablo

Completed By: meg mendoza
Date Completed. 3/31/1997

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5 ☐ MCL exposure limit?
Target Risk (Class C) 1.0E-5 ☐ PEL exposure limit?
Target Hazard Quotient 1.0E+0

Calculation Option: 1

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration		Soil Leaching to Groundwater			X	Soil Volatilization to Indoor Air		X	Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL)* (on-site)		Residential: (on-site)	Commercial. (on-site)		Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"■" if yes	Only if "yes" left
71-43-2	Benzene	5.1E-1	NA	NA	NA		NA	1.9E+0		NA	>Res	1.9E+0	☐	<1
100-41-4	Ethylbenzene	1.0E+0	NA	NA	NA		NA	>Res		NA	>Res	>Res	☐	<1
127-18-4	Tetrachloroethene	2.4E-1	NA	NA	NA		NA	1.6E+3		NA	1.5E+5	1.6E+3	☐	<1
108-88-3	Toluene	1.0E+0	NA	NA	NA		NA	2.3E+2		NA	>Res	2.3E+2	☐	<1
71-55-6	Trichloroethane, 1,1,1-	4.9E-1	NA	NA	NA		NA	5.7E+2		NA	>Res	5.7E+2	☐	<1
1330-20-7	Xylene (mixed isomers)	1.3E+1	NA	NA	NA		NA	>Res		NA	>Res	>Res	☐	<1

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Software. GSI RBCA Spreadsheet Serial· G-289-DJX-518
Version: v 1.0

Benzene correction per CALEPA

1.9 X 0.29 = 0.55

SANPAB2.XLS

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Val Strough Albany Ford
Site Location: 718 San Pablo

Job Identification: 1039 002
Date Completed 3/31/97
Completed By. meg mendoza

Software GSI RBCA Spreadsheet
Version: v 1 0

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined

DEFAULT PARAMETERS

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (l/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg•yr/kg•d)	1.1E+02			9.4E+01	
IRa in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5 8E+03	5 8E+03
SAadj	Adjusted dermal area (cm^2•yr/kg)	2 1E+03			1 7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	FALSE	
GW.v	Volatilization to Outdoor Air	FALSE	FALSE	
GW.b	Vapor Intrusion to Buildings	FALSE	FALSE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	FALSE	TRUE	
SS.v	Volatiles and Particulate Inhalation	FALSE	FALSE	TRUE
SS.d	Direct Ingestion and Dermal Contact	FALSE	FALSE	TRUE
S.l	Leaching to Groundwater from all Soils	FALSE	FALSE	
S.b	Intrusion to Buildings - Subsurface Soils	FALSE	TRUE	

Matrix of Receptor Distance and Location on- or off-site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		TRUE		TRUE
S	Inhalation receptor (cm)		TRUE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	***1.0E-05***	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1 0E+00	
Opt	Calculation Option (1, 2, or 3)	1	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Commercial/Industrial Chronic	Commercial/Industrial Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	***2.3E+05***		***2.3E+05***
W	Length of affected soil parallel to wind (cm)	***6.1E+02***		***6.1E+02***
W gw	Length of affected soil parallel to groundwater (cn	1 5E+03		
Uair	Ambient air velocity in mixing zone (cm/s)	2 3E+02		
delta	Air mixing zone height (cm)	2.0E+02		
Lss	Definition of surficial soils (cm)	1.0E+02		
Pe	Particulate areal emission rate (g/cm^2/s)	2 2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	2 5E+03
Ugw.tr	Groundwater Transport velocity (cm/yr)	6.6E+03
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
BC	Biodegradation Capacity (mg/L)	
BIO?	Is Bioattenuation Considered	FALSE
phi eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc sat	Fraction organic carbon in water-bearing unit	1 0E-03

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	5 0E+00		
hv	Vadose zone thickness (cm)	3.0E+02		
rho	Soil density (g/cm^3)	1 7		
foc	Fraction of organic carbon in vadose zone	0 01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	3.0E+02		
Ls	Depth to top of affected soil (cm)	***1.5E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***8.2E+01***		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi w	Volumetric water content	0.342	0.12	0.12
phi a	Volumetric air content	0 038	0 26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3 0E+02
ER	Building air exchange rate (s^-1)	1 4E-04	2 3E-04
Lcrk	Foundation crack thickness (cm)	1 5E+01	
eta	Foundation crack fraction	0.01	

Dispersive Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersion coefficient (cm)		
ay	Transverse dispersion coefficient (cm)		
az	Vertical dispersion coefficient (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

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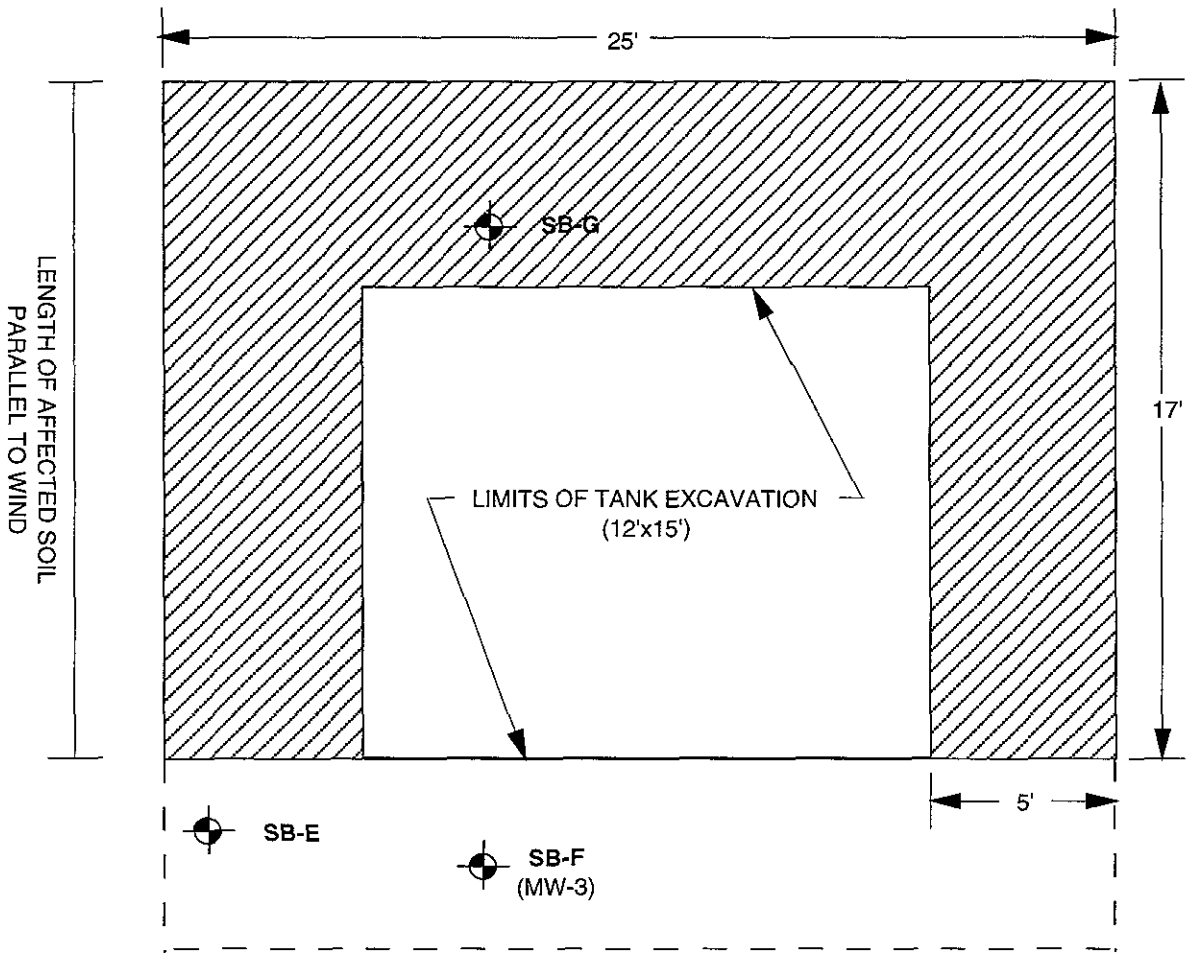
SANPAB2. KLS



AREA ASSUMED TO BE IMPACTED BY PETROLEUM HYDROCARBONS

APPROXIMATE BORING LOCATION

N

APPROXIMATE SCALE (feet)

0 5 10

SKETCH OF CONTAMINATED SOIL AREA

Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

718 SAN PABLO AVENUE
ALBANY, CALIFORNIA

JOB NUMBER	DATE	APPROVED
1039.002	4/11/97	

PLATE 2