Geology / Engineering Geology / Environmental Studies

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September 3, 1998

E-10-1B-192B
HCProjLtr:Seminary RBCAadd3

Ms. Madhulla Logan, Hazardous Materials Specialist
Ms. Eva Chu, Hazardous Materials Specialist
Alameda County Department of Environmental Health
Hazardous Materials Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RE: **THIRD ADDENDUM TO ASTM RBCA TIER TWO EVALUATION**
STID 553 - FORMER GRIMIT AUTO AND REPAIR
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

Dear Ms. Logan and Ms. Chu:

INTRODUCTION

This addendum letter follows your recent telephone conversations with Cathrene Glick, and pertains to our RBCA Tier Two Evaluation report issued December 18, 1997 and subsequent addenda issued January 21, 1998 and July 7, 1998. Per your directive, we have modified our modeling input data to reflect a fraction of organic carbon value of 0.021, as opposed to the previously utilized fraction of 0.025.

DISCUSSION

The revised Tier Two output data are presented in the attached appendices. The analyses indicate the site specific target levels (SSTLs) are modified for some cases, with a relatively slight decrease in SSTL for some compounds.

CONCLUSIONS

We conclude from this addendum evaluation that contaminant levels at the site remain less than the respective Tier Two SSTLs. The exception is for ground water ingestion, which as previously stipulated by your office, is not a concern for this site. Therefore, our previous conclusions (July 7, 1998) are unchanged.

RECOMMENDATIONS

The most recent ground water monitoring was conducted in October, 1997. A round of ground water monitoring should be conducted, to confirm that the ground water contaminant concentrations are consistent with the data used in this analysis. In order for the owner to receive pre-approval for this event from the State Fund, a brief letter requesting the monitoring from your office is required.

LIMITATIONS

This evaluation has been prepared according to generally accepted geologic and environmental practices. No other warranty, either expressed or implied as to the methods, results, conclusions or professional advice provided is made. It should be recognized that certain limitations are inherent in the evaluation of subsurface conditions, and that certain conditions may not be detected during an investigation of this type. If you wish to reduce the level of uncertainty associated with this study, we should be contacted for additional consultation.

The analysis, conclusions and recommendations contained in this report are based onsite conditions as they existed at the time of our investigation; review of previous reports relevant to the site conditions; and laboratory results from an outside analytical laboratory. Changes in the information or data gained from any of these sources could result in changes in our conclusions or recommendations. If such changes do occur, we should be advised so that we can review our report in light of those changes.

CLOSING

If you have any questions, or require additional information, please do not hesitate to call.

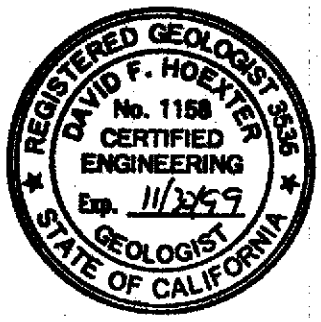
Very truly yours,

HOEXTER CONSULTING, INC.

Cathrene D. Glick

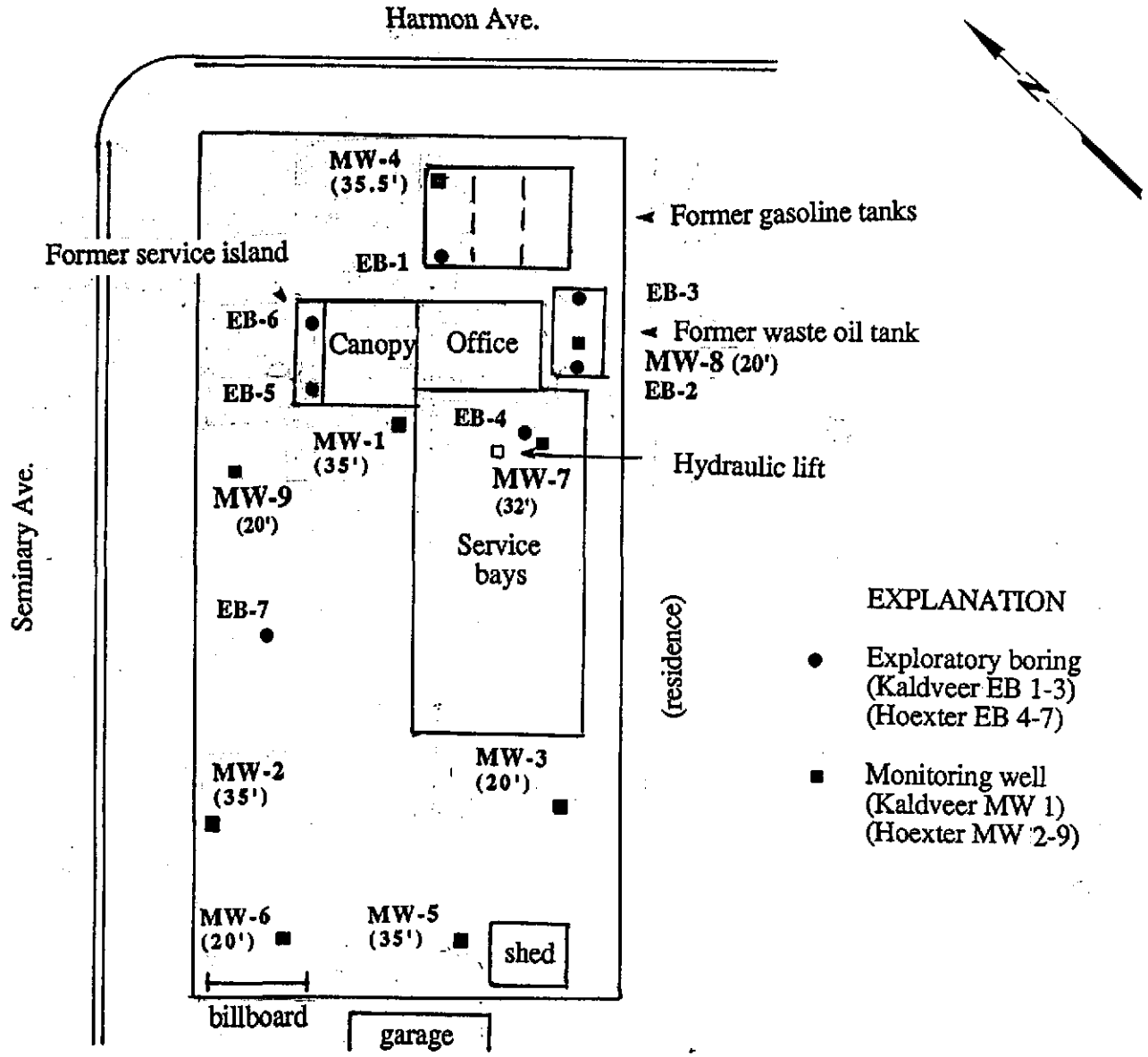
Cathrene D. Glick, RG/CEG/HG/REA
Consulting Geologist

David F. Hoexter, RG/CEG/REA
Principal Geologist



Enclosures:

Site Plan
Appendices: RBCA Evaluation Output Data (applicable tables only)
- A- On-Site Risks
- B - Off-Site Risks (residence to southeast)
- C - Off-Site Risks (residence to southwest)



Base: A. Deak, Licensed Land Surveyor, 3/21/96 (wells, streets & property line); Hoexter field sketch, 10/25/93 (explor. borings, other features)

20 0 20 40

Approximate Scale in Feet

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SITE PLAN

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 2

Output Table 1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Job Identification: E-10-1B-192B
Date Completed: 6/29/98
Completed By: Cathrene Glick

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			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	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	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
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	Constrctn
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	TRUE	
GW.v	Volatilization to Outdoor Air	FALSE	TRUE	
GW.b	Vapor Intrusion to Buildings	FALSE	TRUE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	TRUE	TRUE	
SS.v	Volatiles and Particulate Inhalation	TRUE	TRUE	TRUE
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
S.l	Leaching to Groundwater from all Soils	TRUE	TRUE	
S.b	Intrusion to Buildings - Subsurface Soils	FALSE	TRUE	

Matrix of Receptor Distance and Location on- or off-site		Residential		Commercial/Industrial	
		Distance	On-Site	Distance	On-Site
GW	Groundwater receptor (cm)	7.6E+03	FALSE		TRUE
S	Inhalation receptor (cm)	3.0E+02	FALSE		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)	2	
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)	***9.1E+05***		***9.1E+05***
W	Length of affected soil parallel to wind (cm)	***1.1E+03***		1.0E+03
W.gw	Length of affected soil parallel to groundwater (c	***7.6E+02***		
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)	***1.4E+02***		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***6.1E+02***
I	Groundwater infiltration rate (cm/yr)	***1.5E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***4.5E+03***
Ugw.tr	Groundwater Transport velocity (cm/yr)	***1.4E+04***
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	9.1E+02
Sd	Depth of groundwater source zone (cm)	6.1E+02
BC	Biodegradation Capacity (mg/L)	4.2E+00
BIO?	Is Bioattenuation Considered	TRUE
phi.eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	***2.5E-02***

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***7.6E+00***		
hv	Vadose zone thickness (cm)	***3.0E+02***		
rho	Soil density (g/cm^3)	***1.856***		
foc	Fraction of organic carbon in vadose zone	***0.021***		
phi	Soil porosity in vadose zone	***0.32***		
Lgw	Depth to groundwater (cm)	***3.0E+02***		
Ls	Depth to top of affected soil (cm)	***2.4E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***9.1E+01***		
pH	Soil/groundwater pH	***6.8***		
		capillary	vadose	foundation
phi.w	Volumetric water content	***0.3***	***0.17***	***0.1***
phi.a	Volumetric air content	***0.02***	***0.15***	***0.22***

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)	***1.0E+01***	
eta	Foundation crack fraction	***0.005***	

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)	3.9E+01	
dcz	Vertical dispersion coefficient (cm)	2.7E+01	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	Soil Leaching to Groundwater			X	Ingestion, Inhalation and Dermal Contact		X	Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)		Residential: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: 10 feet	Commercial: (on-site)		Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	☒	#VALUE!
120-12-7	Anthracene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	☒	#VALUE!
71-43-2	Benzene	0.0E+0		6.3E+0	2.1E+1	NA		4.6E+2	3.6E+1		8.1E+2	6.3E+0	☐	<1
75-00-3	Chloroethane	0.0E+0		1.7E+3	4.6E+3	NA		>Res	>Res		>Res	1.7E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0		>Res	>Res	NA		>Res	3.4E+3		4.0E+3	3.4E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0		3.7E+2	1.3E+3	NA		2.2E+3	4.5E+1		1.3E+3	4.5E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0		1.2E+3	3.2E+3	NA		>Res	3.8E+3		3.5E+3	1.2E+3	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0		2.9E+0	9.6E+0	NA		1.5E+2	1.1E+1		3.1E+2	2.9E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0		6.0E+1	1.7E+2	NA		>Res	3.7E+2		3.0E+2	6.0E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	0.0E+0		1.2E+2	3.4E+2	NA		>Res	>Res		>Res	1.2E+2	☐	<1
100-41-4	Ethylbenzene	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	☒	#VALUE!
1634-04-4	Methyl t-Butyl Ether	0.0E+0		1.5E+1	4.1E+1	NA		>Res	2.0E+2		2.4E+2	1.5E+1	☐	<1
91-20-3	Naphthalene	0.0E+0		>Res	>Res	NA		>Res	7.6E+2		>Res	7.6E+2	☐	<1
85-01-8	Phenanthrene	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	☒	#VALUE!
127-18-4	Tetrachloroethene	0.0E+0		1.1E+4	3.6E+4	NA		4.7E+4	2.1E+1		6.4E+2	2.1E+1	☐	<1
108-88-3	Toluene	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0		4.7E+3	>Res	NA		>Res	3.5E+3		3.9E+3	3.5E+3	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0		4.0E-1	1.4E+0	NA		2.3E+2	1.8E+1		4.2E+2	4.0E-1	☐	<1
79-01-6	Trichloroethene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	9.7E+1		>Res	#VALUE!	☒	#VALUE!
75-01-4	Vinyl chloride	0.0E+0		4.3E-2	1.4E-1	NA		4.4E+1	5.7E-1		1.6E+1	4.3E-2	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: 10 feet	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	☠☠	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	☠☠	#VALUE!
71-43-2	Benzene	6.4E-2	6.3E+0	2.1E+1	NA	NA	1.6E+0	6.9E+2	9.7E+2	1.6E+0	☐	<1
75-00-3	Chloroethane	0.0E+0	1.7E+3	4.6E+3	NA	NA	4.7E+3	>Res	>Res	1.7E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	5.5E-2	>Res	>Res	NA	NA	5.1E+3	>Res	>Res	5.1E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.7E+2	1.3E+3	NA	NA	1.8E+2	>Res	>Res	1.8E+2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.2E+3	3.2E+3	NA	NA	2.3E+2	>Res	>Res	2.3E+2	☐	<1
107-06-2	Dichloroethane, 1,2-	5.0E-2	2.9E+0	9.6E+0	NA	NA	1.2E+0	2.2E+2	3.1E+2	1.2E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	3.1E-2	6.0E+1	1.7E+2	NA	NA	1.6E+1	>Res	>Res	1.6E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	5.0E-2	1.2E+2	3.4E+2	NA	NA	3.3E+1	>Res	>Res	3.3E+1	☐	<1
100-41-4	Ethylbenzene	1.1E+0	>Res	>Res	NA	NA	>Res	>Res	>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	☠☠	#VALUE!
########	Methyl t-Butyl Ether	5.0E-2	1.5E+1	4.1E+1	NA	NA	2.4E+3	>Res	>Res	1.5E+1	☐	<1
91-20-3	Naphthalene	5.0E-2	>Res	>Res	NA	NA	4.9E+2	>Res	>Res	4.9E+2	☐	<1
85-01-8	Phenanthrene	5.0E-2	>Res	>Res	NA	NA	>Res	>Res	>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	☠☠	#VALUE!
127-18-4	Tetrachloroethene	1.5E+0	1.1E+4	3.6E+4	NA	NA	7.1E+3	>Res	>Res	7.1E+3	☐	<1
108-88-3	Toluene	1.6E+0	>Res	>Res	NA	NA	2.4E+2	>Res	>Res	2.4E+2	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	4.7E+3	>Res	NA	NA	5.0E+2	>Res	>Res	5.0E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.0E-1	1.4E+0	NA	NA	8.0E-1	3.5E+2	4.9E+2	4.0E-1	☐	<1
79-01-6	Trichloroethene	1.1E-1	#VALUE!	#VALUE!	NA	NA	7.6E+0	>Res	>Res	#VALUE!	☠☠	#VALUE!
75-01-4	Vinyl chloride	5.0E-2	4.3E-2	1.4E-1	NA	NA	1.5E-1	6.7E+1	9.3E+1	4.3E-2	■	1.0E+00
########	Xylene (mixed isomers)	2.2E+0	>Res	>Res	NA	NA	>Res	>Res	>Res	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	Groundwater Ingestion			X	Groundwater Volatilization to Indoor Air		X	Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)		Residential: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0		#VALUE!	#VALUE!	NA		NA	>Sol		NA	>Sol	#VALUE!	✂	#VALUE!
120-12-7	Anthracene	0.0E+0		#VALUE!	#VALUE!	NA		NA	>Sol		NA	>Sol	#VALUE!	✂	#VALUE!
71-43-2	Benzene	1.9E+0		2.9E-2	9.9E-2	NA		NA	1.9E+0		NA	8.4E+2	2.9E-2	■	6.3E+01
75-00-3	Chloroethane	1.6E-3		1.5E+1	4.1E+1	NA		NA	4.3E+3		NA	>Sol	1.5E+1	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	5.0E-3		3.3E+0	9.2E+0	NA		NA	>Sol		NA	>Sol	3.3E+0	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0		3.5E-2	1.2E-1	NA		NA	6.4E+0		NA	>Sol	3.5E-2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0		3.7E+0	1.0E+1	NA		NA	1.8E+2		NA	>Sol	3.7E+0	☐	<1
107-06-2	Dichloroethane, 1,2-	2.2E-2		9.4E-3	3.1E-2	NA		NA	1.5E+0		NA	4.9E+2	9.4E-3	■	2.0E+00
156-59-2	Dichloroethene, cis-1,2-	5.6E-2		3.7E-1	1.0E+0	NA		NA	8.3E+0		NA	>Sol	3.7E-1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	2.8E-3		7.3E-1	2.0E+0	NA		NA	4.4E+1		NA	>Sol	7.3E-1	☐	<1
100-41-4	Ethylbenzene	9.8E-1		3.7E+0	1.0E+1	NA		NA	>Sol		NA	>Sol	3.7E+0	☐	<1
206-44-0	Fluoranthene	0.0E+0		#VALUE!	#VALUE!	NA		NA	>Sol		NA	>Sol	#VALUE!	✂	#VALUE!
1634-04-4	Methyl t-Butyl Ether	2.2E-1		1.8E-1	5.1E-1	NA		NA	7.7E+3		NA	>Sol	1.8E-1	■	1.0E+00
91-20-3	Naphthalene	1.1E+0		1.5E-1	4.1E-1	NA		NA	2.6E+1		NA	>Sol	1.5E-1	■	8.0E+00
85-01-8	Phenanthrene	1.1E-3		1.5E-1	4.1E-1	NA		NA	>Sol		NA	>Sol	1.5E-1	☐	<1
129-00-0	Pyrene	0.0E+0		#VALUE!	#VALUE!	NA		NA	>Sol		NA	>Sol	#VALUE!	✂	#VALUE!
127-18-4	Tetrachloroethene	1.4E-2		1.6E-2	5.5E-2	NA		NA	1.4E+1		NA	>Sol	1.6E-2	☐	<1
108-88-3	Toluene	1.9E+0		7.3E+0	2.0E+1	NA		NA	2.3E+2		NA	>Sol	7.3E+0	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0		3.3E+0	9.2E+0	NA		NA	3.7E+2		NA	>Sol	3.3E+0	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0		1.5E-2	5.0E-2	NA		NA	4.3E+0		NA	1.2E+3	1.5E-2	☐	<1
79-01-6	Trichloroethene	0.039.87		#VALUE!	#VALUE!	NA		NA	3.0E+0		NA	8.9E+2	#VALUE!	✂	#VALUE!
75-01-4	Vinyl chloride	3.1E-2		4.5E-4	1.5E-3	NA		NA	2.9E-2		NA	1.6E+1	4.5E-4	■	6.9E+01
1330-20-7	Xylene (mixed isomers)	3.3E+0		7.3E+1	>Sol	NA		NA	>Sol		NA	>Sol	7.3E+1	☐	<1

APPENDIX B

Off-Site Risks
Residence to Southeast

Output Table 1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Job Identification: E-10-1B-192B
Date Completed: 6/29/98
Completed By: Cathrene Glick

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	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
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	TRUE	FALSE	
GW.v	Volatilization to Outdoor Air	TRUE	FALSE	
GW.b	Vapor Intrusion to Buildings	TRUE	FALSE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	TRUE	FALSE	
SS.v	Volatiles and Particulate Inhalation	TRUE	FALSE	TRUE
SS.d	Direct Ingestion and Dermal Contact	TRUE	FALSE	TRUE
S.l	Leaching to Groundwater from all Soils	TRUE	FALSE	
S.b	Intrusion to Buildings - Subsurface Soils	TRUE	FALSE	

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	7.6E+03	FALSE
S	Inhalation receptor (cm)		TRUE	3.0E+02	FALSE

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)	2	
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)	***8.1E+05***		***8.1E+05***
W	Length of affected soil parallel to wind (cm)	***1.1E+03***		1.0E+03
W.gw	Length of affected soil parallel to groundwater (c	***7.6E+02***		
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)	***1.4E+02***		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***6.1E+02***
I	Groundwater infiltration rate (cm/yr)	***1.5E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***4.5E+03***
Ugw.tr	Groundwater Transport velocity (cm/yr)	***1.4E+04***
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	9.1E+02
Sd	Depth of groundwater source zone (cm)	6.1E+02
BC	Biodegradation Capacity (mg/L)	4.2E+00
BIO?	Is Bioattenuation Considered	TRUE
phi.eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	***2.5E-02***

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***7.6E+00***		
hv	Vadose zone thickness (cm)	***3.0E+02***		
rho	Soil density (g/cm^3)	***1.856***		
foc	Fraction of organic carbon in vadose zone	***0.021***		
phi	Soil porosity in vadose zone	***0.32***		
Lgw	Depth to groundwater (cm)	***3.0E+02***		
Ls	Depth to top of affected soil (cm)	***2.4E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***9.1E+01***		
pH	Soil/groundwater pH	***6.8***		
		capillary	vadose	foundation
phi.w	Volumetric water content	***0.3***	***0.17***	***0.1***
phi.a	Volumetric air content	***0.02***	***0.15***	***0.22***

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)	***1.0E+01***	
eta	Foundation crack fraction	***0.005***	

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)	3.9E+01	
dcz	Vertical dispersion coefficient (cm)	2.7E+01	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: 0 feet	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" if yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
71-43-2	Benzene	0.0E+0	6.3E+0	NA	NA	2.1E+1	NA	8.1E+2	6.3E+0	☐	<1
75-00-3	Chloroethane	0.0E+0	1.7E+3	NA	NA	>Res	NA	>Res	1.7E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0	>Res	NA	NA	2.4E+3	NA	4.0E+3	2.4E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.7E+2	NA	NA	2.6E+1	NA	1.3E+3	2.6E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.2E+3	NA	NA	2.6E+3	NA	3.5E+3	1.2E+3	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0	2.9E+0	NA	NA	6.6E+0	NA	3.1E+2	2.9E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0	6.0E+1	NA	NA	2.6E+2	NA	3.0E+2	6.0E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	0.0E+0	1.2E+2	NA	NA	>Res	NA	>Res	1.2E+2	☐	<1
100-41-4	Ethylbenzene	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
1634-04-4	Methyl t-Butyl Ether	0.0E+0	1.5E+1	NA	NA	1.4E+2	NA	2.4E+2	1.5E+1	☐	<1
91-20-3	Naphthalene	0.0E+0	>Res	NA	NA	5.3E+2	NA	>Res	5.3E+2	☐	<1
85-01-8	Phenanthrene	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
127-18-4	Tetrachloroethene	0.0E+0	1.1E+4	NA	NA	1.2E+1	NA	6.4E+2	1.2E+1	☐	<1
108-88-3	Toluene	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	4.7E+3	NA	NA	2.4E+3	NA	3.9E+3	2.4E+3	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.0E-1	NA	NA	1.1E+1	NA	4.2E+2	4.0E-1	☐	<1
79-01-6	Trichloroethene	0.0E+0	9.3E+0	NA	NA	5.6E+1	NA	>Res	9.3E+0	☐	<1
75-01-4	Vinyl chloride	0.0E+0	4.3E-2	NA	NA	3.3E-1	NA	1.6E+1	4.3E-2	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1

Tier 2 Worksheet 9.2

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: 0 feet	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
71-43-2	Benzene	6.4E-2	6.3E+0	NA	NA	6.1E-1	NA	6.9E+2	NA	6.1E-1	☐	<1
75-00-3	Chloroethane	0.0E+0	1.7E+3	NA	NA	2.2E+3	NA	>Res	NA	1.7E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	5.5E-2	>Res	NA	NA	2.0E+3	NA	>Res	NA	2.0E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.7E+2	NA	NA	5.9E+1	NA	>Res	NA	5.9E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.2E+3	NA	NA	1.1E+2	NA	>Res	NA	1.1E+2	☐	<1
107-06-2	Dichloroethane, 1,2-	5.0E-2	2.9E+0	NA	NA	4.0E-1	NA	2.2E+2	NA	4.0E-1	☐	<1
156-59-2	Dichloroethene, cis-1,2-	3.1E-2	6.0E+1	NA	NA	7.6E+0	NA	>Res	NA	7.6E+0	☐	<1
156-60-5	Dichloroethene,1,2-trans-	5.0E-2	1.2E+2	NA	NA	1.5E+1	NA	>Res	NA	1.5E+1	☐	<1
100-41-4	Ethylbenzene	1.6E+0	>Res	NA	NA	2.2E+2	NA	>Res	NA	2.2E+2	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
########	Methyl t-Butyl Ether	5.0E-2	1.5E+1	NA	NA	9.5E+2	NA	>Res	NA	1.5E+1	☐	<1
91-20-3	Naphthalene	5.0E-2	>Res	NA	NA	1.9E+2	NA	>Res	NA	1.9E+2	☐	<1
85-01-8	Phenanthrene	5.0E-2	>Res	NA	NA	>Res	NA	>Res	NA	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
127-18-4	Tetrachloroethene	1.5E+0	1.1E+4	NA	NA	2.3E+3	NA	>Res	NA	2.3E+3	☐	<1
108-88-3	Toluene	1.6E+0	>Res	NA	NA	9.5E+1	NA	>Res	NA	9.5E+1	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	4.7E+3	NA	NA	2.2E+2	NA	>Res	NA	2.2E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.0E-1	NA	NA	3.1E-1	NA	3.5E+2	NA	3.1E-1	☐	<1
79-01-6	Trichloroethene	1.1E-1	9.3E+0	NA	NA	3.0E+0	NA	>Res	NA	3.0E+0	☐	<1
75-01-4	Vinyl chloride	5.0E-2	4.3E-2	NA	NA	5.9E-2	NA	6.7E+1	NA	4.3E-2	■	1.0E+00
########	Xylene (mixed isomers)	2.2E+0	>Res	NA	NA	>Res	NA	>Res	NA	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
71-43-2	Benzene	5.2E-1	2.9E-2	NA	NA	6.1E-1	NA	5.0E+2	NA	2.9E-2	■	1.8E+01
75-00-3	Chloroethane	8.4E-3	1.5E+1	NA	NA	1.7E+3	NA	>Sol	NA	1.5E+1	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	2.3E-3	3.3E+0	NA	NA	7.5E+1	NA	>Sol	NA	3.3E+0	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.5E-2	NA	NA	2.1E+0	NA	>Sol	NA	3.5E-2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	3.7E+0	NA	NA	7.1E+1	NA	>Sol	NA	3.7E+0	☐	<1
107-06-2	Dichloroethane, 1,2-	2.0E-3	9.4E-3	NA	NA	4.7E-1	NA	2.9E+2	NA	9.4E-3	☐	<1
156-59-2	Dichloroethene, cis-1,2-	2.3E-2	3.7E-1	NA	NA	3.2E+0	NA	>Sol	NA	3.7E-1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	1.3E-3	7.3E-1	NA	NA	1.7E+1	NA	>Sol	NA	7.3E-1	☐	<1
100-41-4	Ethylbenzene	2.1E-1	3.7E+0	NA	NA	>Sol	NA	>Sol	NA	3.7E+0	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
1634-04-4	Methyl t-Butyl Ether	8.2E-2	1.8E-1	NA	NA	3.0E+3	NA	>Sol	NA	1.8E-1	☐	<1
91-20-3	Naphthalene	5.0E-4	1.5E-1	NA	NA	9.9E+0	NA	>Sol	NA	1.5E-1	☐	<1
85-01-8	Phenanthrene	5.0E-4	1.5E-1	NA	NA	>Sol	NA	>Sol	NA	1.5E-1	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
127-18-4	Tetrachloroethene	4.4E-2	1.6E-2	NA	NA	4.5E+0	NA	>Sol	NA	1.6E-2	■	3.0E+00
108-88-3	Toluene	8.7E-2	7.3E+0	NA	NA	9.0E+1	NA	>Sol	NA	7.3E+0	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	3.3E+0	NA	NA	1.4E+2	NA	>Sol	NA	3.3E+0	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	1.5E-2	NA	NA	1.4E+0	NA	7.4E+2	NA	1.5E-2	☐	<1
79-01-6	Trichloroethene	6.4E-2	7.7E-2	NA	NA	9.6E-1	NA	5.3E+2	NA	7.7E-2	☐	<1
75-01-4	Vinyl chloride	3.1E-2	4.5E-4	NA	NA	9.2E-3	NA	9.4E+0	NA	4.5E-4	■	6.9E+01
1330-20-7	Xylene (mixed isomers)	1.3E-1	7.3E+1	NA	NA	>Sol	NA	>Sol	NA	7.3E+1	☐	<1

APPENDIX C

Off-Site Risks
Residence to Southwest

Output Table 1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Job Identification: E-10-1B-1928
Date Completed: 6/29/98
Completed By: Cathrene Glick

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			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	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	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
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	Constrctn
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	FALSE	
GW.v	Volatilization to Outdoor Air	TRUE	FALSE	
GW.b	Vapor Intrusion to Buildings	TRUE	FALSE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	TRUE	FALSE	
SS.v	Volatiles and Particulate Inhalation	TRUE	FALSE	TRUE
SS.d	Direct Ingestion and Dermal Contact	TRUE	FALSE	TRUE
S.l	Leaching to Groundwater from all Soils	TRUE	FALSE	
S.b	Intrusion to Buildings - Subsurface Soils	TRUE	FALSE	

Matrix of Receptor Distance and Location on- or off-site		Residential		Commercial/Industrial	
		Distance	On-Site	Distance	On-Site
GW	Groundwater receptor (cm)		TRUE	7.6E+03	FALSE
S	Inhalation receptor (cm)		TRUE	3.0E+02	FALSE

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)	2	
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)	***8.1E+05***		***8.1E+05***
W	Length of affected soil parallel to wind (cm)	***1.1E+03***		1.0E+03
W.gw	Length of affected soil parallel to groundwater (c	***7.6E+02***		
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)	***1.4E+02***		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***6.1E+02***
I	Groundwater infiltration rate (cm/yr)	***1.5E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***4.5E+03***
Ugw.tr	Groundwater Transport velocity (cm/yr)	***1.4E+04***
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	9.1E+02
Sd	Depth of groundwater source zone (cm)	6.1E+02
BC	Biodegradation Capacity (mg/L)	4.2E+00
BIO?	Is Bioattenuation Considered	TRUE
phi.eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	***2.5E-02***

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***7.6E+00***		
hv	Vadose zone thickness (cm)	***3.0E+02***		
rho	Soil density (g/cm^3)	***1.856***		
foc	Fraction of organic carbon in vadose zone	***0.021***		
phi	Soil porosity in vadose zone	***0.32***		
Lgw	Depth to groundwater (cm)	***3.0E+02***		
Ls	Depth to top of affected soil (cm)	***2.4E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***9.1E+01***		
pH	Soil/groundwater pH	***6.8***		
		capillary	vadose	foundation
phi.w	Volumetric water content	***0.3***	***0.17***	***0.1***
phi.a	Volumetric air content	***0.02***	***0.15***	***0.22***

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)	***1.0E+01***	
eta	Foundation crack fraction	***0.005***	

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)	3.9E+01	
dcz	Vertical dispersion coefficient (cm)	2.7E+01	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-6
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: 0 feet	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" if yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
71-43-2	Benzene	0.0E+0	6.3E+0	NA	NA	2.1E+1	NA	6.1E+2	6.3E+0	☐	<1
75-00-3	Chloroethane	0.0E+0	1.7E+3	NA	NA	>Res	NA	>Res	1.7E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0	>Res	NA	NA	2.4E+3	NA	4.0E+3	2.4E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.7E+2	NA	NA	2.6E+1	NA	1.3E+3	2.6E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.2E+3	NA	NA	2.6E+3	NA	3.5E+3	1.2E+3	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0	2.9E+0	NA	NA	6.6E+0	NA	3.1E+2	2.9E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0	6.0E+1	NA	NA	2.6E+2	NA	3.0E+2	6.0E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	0.0E+0	1.2E+2	NA	NA	>Res	NA	>Res	1.2E+2	☐	<1
100-41-4	Ethylbenzene	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
1634-04-4	Methyl t-Butyl Ether	0.0E+0	1.5E+1	NA	NA	1.4E+2	NA	2.4E+2	1.5E+1	☐	<1
91-20-3	Naphthalene	0.0E+0	>Res	NA	NA	5.3E+2	NA	>Res	5.3E+2	☐	<1
85-01-8	Phenanthrene	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	#VALUE!	☒	#VALUE!
127-18-4	Tetrachloroethene	0.0E+0	1.1E+4	NA	NA	1.2E+1	NA	6.4E+2	1.2E+1	☐	<1
108-88-3	Toluene	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	4.7E+3	NA	NA	2.4E+3	NA	3.9E+3	2.4E+3	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.0E-1	NA	NA	1.1E+1	NA	4.2E+2	4.0E-1	☐	<1
79-01-6	Trichloroethene	0.0E+0	9.3E+0	NA	NA	5.6E+1	NA	>Res	9.3E+0	☐	<1
75-01-4	Vinyl chloride	0.0E+0	4.3E-2	NA	NA	3.3E-1	NA	1.6E+1	4.3E-2	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: 0 feet	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
71-43-2	Benzene	6.4E-2	6.3E+0	NA	NA	6.1E-1	NA	6.9E+2	NA	6.1E-1	☐	<1
75-00-3	Chloroethane	0.0E+0	1.7E+3	NA	NA	2.2E+3	NA	>Res	NA	1.7E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	5.5E-2	>Res	NA	NA	2.0E+3	NA	>Res	NA	2.0E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.7E+2	NA	NA	5.9E+1	NA	>Res	NA	5.9E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.2E+3	NA	NA	1.1E+2	NA	>Res	NA	1.1E+2	☐	<1
107-06-2	Dichloroethane, 1,2-	5.0E-2	2.9E+0	NA	NA	4.0E-1	NA	2.2E+2	NA	4.0E-1	☐	<1
156-59-2	Dichloroethene, cis-1,2-	3.1E-2	6.0E+1	NA	NA	7.6E+0	NA	>Res	NA	7.6E+0	☐	<1
156-60-5	Dichloroethene,1,2-trans-	5.0E-2	1.2E+2	NA	NA	1.5E+1	NA	>Res	NA	1.5E+1	☐	<1
100-41-4	Ethylbenzene	1.1E+0	>Res	NA	NA	2.2E+2	NA	>Res	NA	2.2E+2	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
########	Methyl t-Butyl Ether	5.0E-2	1.5E+1	NA	NA	9.5E+2	NA	>Res	NA	1.5E+1	☐	<1
91-20-3	Naphthalene	5.0E-2	>Res	NA	NA	1.9E+2	NA	>Res	NA	1.9E+2	☐	<1
85-01-8	Phenanthrene	5.0E-2	>Res	NA	NA	>Res	NA	>Res	NA	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	■	#VALUE!
127-18-4	Tetrachloroethene	1.5E+0	1.1E+4	NA	NA	2.3E+3	NA	>Res	NA	2.3E+3	☐	<1
108-88-3	Toluene	1.6E+0	>Res	NA	NA	9.5E+1	NA	>Res	NA	9.5E+1	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	4.7E+3	NA	NA	2.2E+2	NA	>Res	NA	2.2E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.0E-1	NA	NA	3.1E-1	NA	3.5E+2	NA	3.1E-1	☐	<1
79-01-6	Trichloroethene	1.1E-1	9.3E+0	NA	NA	3.0E+0	NA	>Res	NA	3.0E+0	☐	<1
75-01-4	Vinyl chloride	5.0E-2	4.3E-2	NA	NA	5.9E-2	NA	6.7E+1	NA	4.3E-2	■	1.0E+00
########	Xylene (mixed isomers)	2.2E+0	>Res	NA	NA	>Res	NA	>Res	NA	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: Cathrene Glick
Date Completed: 6/29/1998

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	Groundwater Ingestion			X	Groundwater Volatilization to Indoor Air		X	Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)		Residential: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0		#VALUE!	NA	NA		>Sol	NA		>Sol	NA	#VALUE!	☒	#VALUE!
120-12-7	Anthracene	0.0E+0		#VALUE!	NA	NA		>Sol	NA		>Sol	NA	#VALUE!	☒	#VALUE!
71-43-2	Benzene	2.9E-1		2.9E-2	NA	NA		6.1E-1	NA		5.0E+2	NA	2.9E-2	■	1.0E+01
75-00-3	Chloroethane	1.3E-3		1.5E+1	NA	NA		1.7E+3	NA		>Sol	NA	1.5E+1	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	1.1E-3		3.3E+0	NA	NA		7.5E+1	NA		>Sol	NA	3.3E+0	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0		3.5E-2	NA	NA		2.1E+0	NA		>Sol	NA	3.5E-2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0		3.7E+0	NA	NA		7.1E+1	NA		>Sol	NA	3.7E+0	☐	<1
107-06-2	Dichloroethane, 1,2-	2.8E-3		9.4E-3	NA	NA		4.7E-1	NA		2.9E+2	NA	9.4E-3	☐	<1
156-59-2	Dichloroethene, cis-1,2-	7.1E-3		3.7E-1	NA	NA		3.2E+0	NA		>Sol	NA	3.7E-1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	8.5E-4		7.3E-1	NA	NA		1.7E+1	NA		>Sol	NA	7.3E-1	☐	<1
100-41-4	Ethylbenzene	2.9E-1		3.7E+0	NA	NA		>Sol	NA		>Sol	NA	3.7E+0	☐	<1
206-44-0	Fluoranthene	0.0E+0		#VALUE!	NA	NA		>Sol	NA		>Sol	NA	#VALUE!	☒	#VALUE!
1634-04-4	Methyl t-Butyl Ether	1.7E-1		1.8E-1	NA	NA		3.0E+3	NA		>Sol	NA	1.8E-1	☐	<1
91-20-3	Naphthalene	5.0E-4		1.5E-1	NA	NA		9.9E+0	NA		>Sol	NA	1.5E-1	☐	<1
85-01-8	Phenanthrene	5.0E-4		1.5E-1	NA	NA		>Sol	NA		>Sol	NA	1.5E-1	☐	<1
129-00-0	Pyrene	0.0E+0		#VALUE!	NA	NA		>Sol	NA		>Sol	NA	#VALUE!	☒	#VALUE!
127-18-4	Tetrachloroethene	1.0E-4		1.6E-2	NA	NA		4.5E+0	NA		>Sol	NA	1.6E-2	☐	<1
108-88-3	Toluene	5.9E-2		7.3E+0	NA	NA		9.0E+1	NA		>Sol	NA	7.3E+0	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0		3.3E+0	NA	NA		1.4E+2	NA		>Sol	NA	3.3E+0	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0		1.5E-2	NA	NA		1.4E+0	NA		7.4E+2	NA	1.5E-2	☐	<1
79-01-6	Trichloroethene	5.8E-3		7.7E-2	NA	NA		9.6E-1	NA		5.3E+2	NA	7.7E-2	☐	<1
75-01-4	Vinyl chloride	5.7E-3		4.5E-4	NA	NA		9.2E-3	NA		9.4E+0	NA	4.5E-4	■	1.3E+01
1330-20-7	Xylene (mixed isomers)	3.3E-1		7.3E+1	NA	NA		>Sol	NA		>Sol	NA	7.3E+1	☐	<1

Geology / Engineering Geology / Environmental Studies

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September 3, 1998

E-10-1B-192B
HCProjLtr:Seminary RBCAadd3

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Ms. Eva Chu, Hazardous Materials Specialist
Alameda County Department of Environmental Health
Hazardous Materials Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RE: **THIRD ADDENDUM TO ASTM RBCA TIER TWO EVALUATION**
STID 553 - FORMER GRIMIT AUTO AND REPAIR
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

Dear Ms. Logan and Ms. Chu:

INTRODUCTION

This addendum letter follows your recent telephone conversations with Catherine Glick, and pertains to our RBCA Tier Two Evaluation report issued December 18, 1997 and subsequent addenda issued January 21, 1998 and July 7, 1998. Per your directive, we have modified our modeling input data to reflect a fraction of organic carbon value of 0.021, as opposed to the previously utilized fraction of 0.025.

DISCUSSION

The revised Tier Two output data are presented in the attached appendices. The analyses indicate the site specific target levels (SSTLs) are modified for some cases, with a relatively slight decrease in SSTL for some compounds.

CONCLUSIONS

We conclude from this addendum evaluation that contaminant levels at the site remain less than the respective Tier Two SSTLs. The exception is for ground water ingestion, which as previously stipulated by your office, is not a concern for this site. Therefore, our previous conclusions (July 7, 1998) are unchanged.