



January 16, 1998

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Ms. Madhulla Logan  
Alameda County Health Care Services  
Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

RE: Addendum 2 of Draft Tier I Risk Assessment Addendum Report  
2099 Grand Avenue, Alameda, California  
*ACC Project No. 96-6176-1.2*

Dear Ms. Logan:

In response to your letter dated September 27, 1997, ACC Environmental Consultants, Inc., (ACC) submits this second addendum to the Draft Tier 1 Risk Assessment Addendum Report dated December 31, 1996 for the Grand Marina facility located at 2099 Grand Avenue, Alameda, California. Per your request, ACC has reevaluated the surface soil exposure pathway of residual petroleum compounds, identified within the first five feet of the vadoze zone, for construction workers.

## **BACKGROUND**

A draft Risk Assessment Report dated July 26, 1996 was prepared by SECOR International, Inc., (SECOR), and included an evaluation of potential human health risk parameters for soil and groundwater potentially impacted by previous site usage.

On December 31, 1996, ACC prepared a Risk Assessment Report Addendum to document the rationale for requesting site case closure from the Alameda County Health Care Services Agency (ACHSA) and from the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. The focus of this Risk Assessment Addendum Report was to evaluate potential human health risks associated with exposure to residual petroleum compounds detected in subsurface soil and groundwater in the immediate vicinity of the former UST.

In a letter dated September 22, 1997, Ms. Madhulla Logan requests that ACC provide specific modifications to be included in the Risk Assessment Report Addendum of December 31, 1996

## **SUMMARY OF POTENTIAL RISK – COMMERCIAL WORKER**

In accordance with Ms. Madhulla Logan's letter request, ACC has reevaluated the potential excess cancer risk for the onsite commercial worker using a slope factor of 0.1 mg/kg/day. The attached spreadsheets present the excess cancer risk for the onsite commercial worker from benzene concentrations in subsurface soil and groundwater in Building G at the subject site. Based on this reevaluation, the total excess cancer risk for the onsite commercial worker is  $2.0 \times 10^{-5}$ .

Ms. Madhulla Logan  
January 15, 1998  
Page 2 of 2

## **SUMMARY OF POTENTIAL RISK - CONSTRUCTION WORKER**

In accordance with Ms. Madhulla Logan's letter request, ACC evaluated the potential excess cancer risk for the onsite construction worker, based on an exposure period of 8 hours per day for 180 days, from residual impact in the soil up to 5 feet below ground surface. Based on this evaluation, the excess cancer risk for the construction worker is 1.0E-7.

## **CONCLUSION**

The Tier 1 structure does not incorporate site-specific parameters and is a conservative approach to estimating risk to human health and environment. ACC believes that the risk to human health and environment is minimal to nonexistent. Based on the Risk Assessment Investigation, ACC recommends that this site be closed from further investigation and remedial action.

If you have any questions about this Addendum, please call me at (510) 638-8400.

Sincerely,

*Misty Kaltreider FOR*

Misty Kaltreider  
Project Geologist

/th:mck

Enclosure

cc: Mr. Curt Bolton, Grand Marina  
Mr. Dick Rudloff, City of Alameda

# RBCA TIER 1/TIER 2 EVALUATION

# Output Table 1

Site Name: Grand Marina      Job Identification: 6176-001 02  
 Site Location: 2099 Grand Avenue, Alameda      Date Completed: 1/13/98  
 Completed By: Misty Kallreider

Software: GSI RBCA Spreadsheet  
 Version: 1 0 1

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

Exposure Parameter	Definition (Units)	Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Constrctn
ATc	Averaging time for carcinogens (yr)	<u>25</u>				
ATn	Averaging time for non-carcinogens (yr)	<u>25</u>	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	<u>15</u>	6	16	<u>15</u>	1
t	Averaging time for vapor flux (yr)	15			15	1
EF	Exposure Frequency (days/yr)	<u>250</u>			250	180
EF Derm	Exposure Frequency for dermal exposure	<u>250</u>			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)	9.3E+01			8.6E+01	
IRa in	Inhalation rate indoor (m <sup>3</sup> /day)	15			20	
IRa out	Inhalation rate outdoor (m <sup>3</sup> /day)	20			20	10
SA	Skin surface area (dormal) (cm <sup>2</sup> )	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm <sup>2</sup> -yr/kg)	8.4E+02			8.4E+02	
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				

Surface Parameters	Definition (Units)	Residential	Commercial
		Value	Value
A	Contaminated soil area (cm <sup>2</sup> )	1.0E+06	1.0E+06
W	Length of affect. soil parallel to wind (cm)	1.1E+03	1.0E+03
W gw	Length of affect. soil parallel to groundwater (cm)	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	Thickness of affected surface soils (cm)	1.5E+02	
Pe	Particulate areal emission rate (g/cm <sup>2</sup> /s)	6.9E-14	

Groundwater Parameters	Definition (Units)	Value
		Value
delta gw	Groundwater mixing zone depth (cm)	2.7E+02
i	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	
Ugw tr	Groundwater seepage velocity (cm/yr)	
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)	
ph eff	Effective porosity in water-bearing unit	3.8E-01
foe sat	Fraction organic carbon in water-bearing unit	2.6E-02
BIO?	Is biodegradation considered?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil Parameters	Definition (Units)	Value		
		Value	Value	Value
h <sub>c</sub>	Capillary zone thickness (cm)	5.0E+00		
h <sub>v</sub>	Vadose zone thickness (cm)	2.7E+02		
rho	Soil density (g/cm <sup>3</sup> )	1.8		
foe	Fraction of organic carbon in vadose zone	0.0285		
phi	Soil porosity in vadose zone	0.351		
L <sub>gw</sub>	Depth to groundwater (cm)	2.7E+02		
L <sub>s</sub>	Depth to top of affected subsurface soil (cm)	2.1E+02		
L <sub>subs</sub>	Thickness of affected subsurface soils (cm)	1.5E+02		
pH	Soil/groundwater pH	7.2		
phi w	Volumetric water content	0.298	0.183	0.12
phi a	Volumetric air content	0.145	0.168	0.26

Building Parameters	Definition (Units)	Residential	Commercial
		Value	Value
V <sub>b</sub>	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s <sup>-1</sup> )	1.4E-04	2.3E-04
L <sub>crk</sub>	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.005	

Transport Parameters	Definition (Units)	Residential	Commercial
		Value	Value
<b>Groundwater</b>			
ax	Longitudinal dispersivity (cm)		
ay	Transverse dispersivity (cm)		
az	Vertical dispersivity (cm)		
<b>Vapor</b>			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

Matrix of Exposed Persons to Complete Exposure Pathways	Residential		Commercial/Industrial		
	Chronic	Constrctn	Chronic	Constrctn	
<b>Outdoor Air Pathways:</b>					
SS v	Volatiles and Particulates from Surface Soils	FALSE		FALSE	TRUE
S v	Volatilization from Subsurface Soils	FALSE		TRUE	
GW v	Volatilization from Groundwater	FALSE		TRUE	
<b>Indoor Air Pathways:</b>					
S b	Vapors from Subsurface Soils	FALSE		TRUE	
GW b	Vapors from Groundwater	FALSE		TRUE	
<b>Soil Pathways:</b>					
SS d	Direct Ingestion and Dermal Contact	FALSE		TRUE	TRUE
<b>Groundwater Pathways:</b>					
GW i	Groundwater Ingestion	FALSE		FALSE	
SI	Leaching to Groundwater from all Soils	FALSE		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		TRUE
S	Inhalation receptor (cm)		TRUE	TRUE

Matrix of Target Risks	Definition	Individual	Cumulative
		Value	Value
TRab	Target Risk (class A&B carcinogens)	<u>1.0E-05</u>	
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	1	