



PACIFIC ENVIRONMENTAL GROUP, INC.

6/28/96 Reviewed. Ask Morgan about [GW] avg. use; PEL use

7/12. Per M. Sullivan - will collect add'l site-specific data (FOC, etc) and do tier 2

FACSIMILE TRANSMITTAL

DATE: June 24, 1996 PROJECT #: 325-004.1D

TO: Eva Chu FAX: 510/337-9335

Alameda County Env. Health

FROM: Mark Sullivan

IF YOU HAVE ANY PROBLEMS RECEIVING THIS FACSIMILE, PLEASE CALL (408) 441-7500

SHEETS TO FOLLOW COVER PAGE

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COMMENTS:

Eva - I have attached the draft RBCA for Chevron Station 9-7127 in Tracy. Additionally, I have attached several pertinent pages of the GSI RBCA Summary Report. Please call if you have any questions or would like to see some additional information. My phone number is 408/441-7500.

Morgan recommended using highest GW conc. instead of avg. since we don't have building location etc. PELs are measured in 1 month conc. & should not be used as risk #s

June 28, 1996
Project 325-004.1D

Mr. Phil Briggs
Chevron Products Company
P.O. Box 5004
San Ramon, California 94583-0804

Re: Risk-Based Corrective Action Site Evaluation Results
Former Chevron Service Station 9-7127
Grant Line Road at Interstate 580
Tracy, California

Dear Mr. Briggs:

On behalf of Chevron Products Company, Pacific Environmental Group, Inc. (PACIFIC) has completed a Risk-Based Corrective Action (RBCA) Tier 1 evaluation (Attachment A) for the site referenced above. Below is a brief site background, description of the RBCA process, results, and recommendations.

SITE BACKGROUND

The site is a former Chevron service station located at the southeast corner of the junction between Grant Line Road and Interstate 580 in Tracy, California (Figure 1). The site lies adjacent the freeway and is situated within rolling foothills northwest of Tracy. With the exception of a water-supply well, all site improvements have been removed. The site is currently used for cattle-grazing. Grant Line Road terminates at the south-end of the site creating a cul-de-sac which commuters use for daily parking.

The site operated as a gasoline service station between 1971 and 1986. The service station had three underground gasoline storage tanks (USTs) (two 9,500-gallon and one 5,750-gallon) in a common excavation. Based on the extent of backfill materials north-east of the tank complex, it appears that the fuel tank complex may have formerly contained a fourth tank. A 1,500-gallon waste oil tank and a 850-gallon heating fuel tank were located in a common excavation northeast of the station building (Figure 2).

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All tanks were constructed of single-walled fiberglass. The USTs and associated piping were removed on April 4, 1991.

Site Setting

The site elevation is approximately 326 feet above mean sea level. Based on previous investigations conducted at the site, soil beneath the site consists of surficial fill approximately 6 to 17 feet thick overlying sandstone bedrock of the Miocene Neroly Formation (Bishop, 1970) to the maximum depth explored of 40 feet below ground surface (bgs). The Neroly Formation has been described as a marine blue to gray sandstone, which is pebbly in some locations (Dibblee, 1980).

Depth to groundwater on site is variable due to the surficial fill overlaying portions of the site. During February 1996, first encountered groundwater at the site occurred from approximately 28.51 feet bgs at Well MW-1 (within the surficial fill) to 11.45 bgs at Well MW-6 (outside of the surficial fill). The average historical groundwater gradient is 0.005 ft/ft with flow direction varying from north to west.

Previous Investigations

Based on previous investigations, hydrocarbon-impacted soil at the site is limited to the vicinity of the former USTs. Groundwater analytical results indicate dissolved hydrocarbons extending off site to the north and south. Separate-phase hydrocarbons have been noted in Well MW-1 located in the former UST complex.

RBCA EVALUATION

Description

RBCA is a risk-based decision making process that utilizes risk and exposure assessment methodology in order to characterize risk to human health and the environment. The results of the RBCA evaluation are also relevant to the assessment of remedial or corrective action if the risk evaluation warrants, or to provide a basis for closure at the site if the risk is shown to be negligible. RBCA offers a practical guidance for integrating traditional corrective action and exposure and risk assessment activities.

Evaluation Process

Risk assessments involve evaluating constituents of concern (COCs), completeness of exposure pathways, and acceptable risk levels for COCs. The evaluation process

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involves making assumptions regarding site characteristics. The three main assumptions made prior to performing the RBCA evaluation at the subject site were:

1. Complete pathways at the site include soil volatilization to indoor air, soil volatilization to outdoor air, groundwater volatilization to indoor air, and groundwater volatilization to outdoor air.
2. Groundwater ingestion is not a complete pathway because the impacted groundwater is not used as a drinking water source. The domestic well at the site is screened below the impacted interval and is not used as a potable water source. During 1993, weekly petroleum hydrocarbon analysis of the on-site water-supply well was conducted for a period of 44 weeks. Analytical results indicated that total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) concentrations were not detected in the water-supply well with the exception of two occasions. On one occasion, toluene and xylenes compounds were detected at concentrations of 3 and 2 parts per billion (ppb), respectively. On one other occasion, benzene was detected at a concentration of 0.8 ppb. Since these concentrations were not verified during the subsequent sampling events, the results are considered to be anomalous.
3. Since the site is projected for commercial use, a cancer risk of $1:10,0000$ (10^{-6}) was chosen as the maximum allowable human risk and a hazard quotient of 1 was chosen for all non-carcinogenic compounds.

The site is currently zoned for commercial use and it appears unlikely that the site will be zoned for residential use due to freeway proximity. As a result, the human health risk was analyzed using default values for commercial settings in the Groundwater Services, Inc.'s (GSI's) RBCA software program. Currently, GSI produces the most widely recognized and accepted RBCA software program. The on-site commercial setting risk was calculated by averaging the last four quarters of analytical data from all on-site groundwater monitoring wells (MW-1, MW-3, MW-4, and MW-6). Analytical data from the overexcavation conducted during tank removal activities was averaged and utilized as representative soil concentrations. These representative concentrations for BTEX compounds were then compared to the Risk Based Screening Levels (RBSLs) for a Tier I evaluation, as provided in the American Society for Testing and Materials

Is it OK to avg
the last 4 qtr's
[Gw] from all
wells?

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(ASTM) RBCA guidelines. The RBSL for benzene was modified to account for the more stringent California standards compared to federal standards.

The baseline RBCA Tier 1 assessment was conducted utilizing all Tier 1 default parameters. The subsurface soil RBSL values indicated that the representative concentrations of subsurface soils did not exceed the RBSLs for soil volatilization to outdoor and indoor air. The groundwater RBSL values indicated that the representative concentrations of toluene, ethylbenzene, and xylenes compounds in groundwater did not exceed the RBSLs for groundwater volatilization to outdoor and indoor air. The groundwater RBSL values indicated that the representative concentrations of benzene did not exceed the RBSL for outdoor air, however, the representative concentrations of benzene exceeded the RBSL for groundwater volatilization to indoor air. Given the site conditions, the Tier 1 commercial RBSL for groundwater volatilization to indoor air is 1.3 milligrams per liter (mg/L). The representative concentration of benzene in groundwater beneath the site is 6.3 mg/L.

The program was run again utilizing the permissible exposure limits (PELs) in place of the RBSLs. The resulting value for the benzene groundwater volatilization to indoor air is 480 mg/L. This is greater than the representative concentration of benzene in groundwater beneath the site, which is 6.3 mg/L.

CONCLUSIONS

The results of the RBCA evaluation indicate that the representative concentrations of BTEX compounds do not exceed ASTM's recommended RBSLs for soil and groundwater volatilization to indoor air and outdoor air with the exception of benzene concentrations for groundwater volatilization to indoor air. Regarding the groundwater volatilization to indoor air pathway, representative toluene, ethylbenzene and xylenes compound concentrations did not exceed ASTM's recommended RBSLs; however, representative benzene concentrations exceeded the recommended RBSL. When the PEL for benzene is utilized rather than the RBSL, the representative concentration of benzene in groundwater is well below the resulting PEL limit.

RECOMMENDATIONS

Based on the results of this RBCA assessment, PACIFIC recommends that site development continue unimpeded. These results indicate that continued groundwater sampling is appropriate at the site in order to monitor hydrocarbon impact. Additionally, any user of the domestic well at the site shall be notified of the restrictions regarding potable water use from the well. If water from the water-supply well is utilized for sinks,

representative
[benzene] is 6.3 mg/L
why exceed Tier 1
so they chose PELs
where 480 mg/L is
acceptable - is this
OK?

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toilets, and other station activities, granular activated carbon treatment is recommended as was used at the former Chevron station at the site.

If you have any questions or comments regarding this letter or the RBCA Tier 1 evaluation, please call.

Sincerely,

Pacific Environmental Group, Inc.

Mark Sullivan
Project Manager

Michael Hurd
Senior Geologist
CHG 0068

Attachments: Attachment A - RBCA Tier 1 Evaluation

RBCA SUMMARY REPORT

Worksheet 1.3

Site Name: Former Chevron Service Station 9-7127

Date Completed: June 28, 1996

Site Location: Grant Line Road at Interstate 580, Tracy, CA

Completed By: Mark Sullivan

Page 2 of 2

EXECUTIVE SUMMARY DISCUSSION Continued

TIER 1 RBSL OR TIER 2 SSTL EVALUATION

COMPARISON TO SOURCE MEDIA CONCENTRATIONS

- Worksheets 5.1 - 5.7 • Attachment 1

For complete pathways, compare representative source concentrations to applicable RBSL or SSTL values.

Groundwater Volatilization to Indoor Air			Groundwater Volatilization to Outdoor Air				
	RBSL (mg/L)	PEL (mg/L)	Representative Concentrations (mg/L)		RBSL (mg/L)	PEL (mg/L)	Representative Concentrations (mg/L)
Benzene	1.3	480	6.3	Benzene	>Sol	>Sol	6.3
Toluene	35	>Sol	4.6	Toluene	>Sol	>Sol	4.6
Ethylbenzene	>Sol	>Sol	0.46	Ethylbenzene	>Sol	>Sol	0.46
Xylenes	>Sol	>Sol	2.1	Xylenes	>Sol	>Sol	2.1

QUALITATIVE UNCERTAINTY ASSESSMENT

- Worksheets 4.2, 4.4, and 5.1 - 5.7

Discuss uncertainty / conservatism of the site data and calculation methods used in deriving RBSL or SSTL values.

Uncertainty is minimized through the utilization of conservative values for each of the variables in the Tier 1 evaluation.

- Average values were utilized; not maximum values.
- A risk of 10^{-4} was used rather than 10^{-6} .

PROPOSED CORRECTIVE ACTION

- Worksheets 10.1 - 10.3

Describe rationale for proposed action (i.e., no action, interim action, final action, or tier upgrade), considering site classification and land use. Discuss basis for remedy selection, if applicable.

No corrective action proposed based on the Tier 1 evaluation.

- Continued monitoring proposed.
- Restrict water well usage/treatment.

REFERENCE DOCUMENTS

- Appendices

List the document sources for the data cited in this report.

1. Kleinfelder, *Subsurface Environmental Investigation*, January 1988.
2. GeoStrategies, Inc., *Sampling Data Summary*, September 1989.
3. Blaine Tech Services, Inc. *Tank Excavation Report*, June 1991.
4. Gettler Ryan, *Groundwater Monitoring Report*, April 1996.

RBCA SUMMARY REPORT

Worksheet 1.4

Site Name: Former Chevron Service Station 9-7127

Date Completed: June 28, 1996

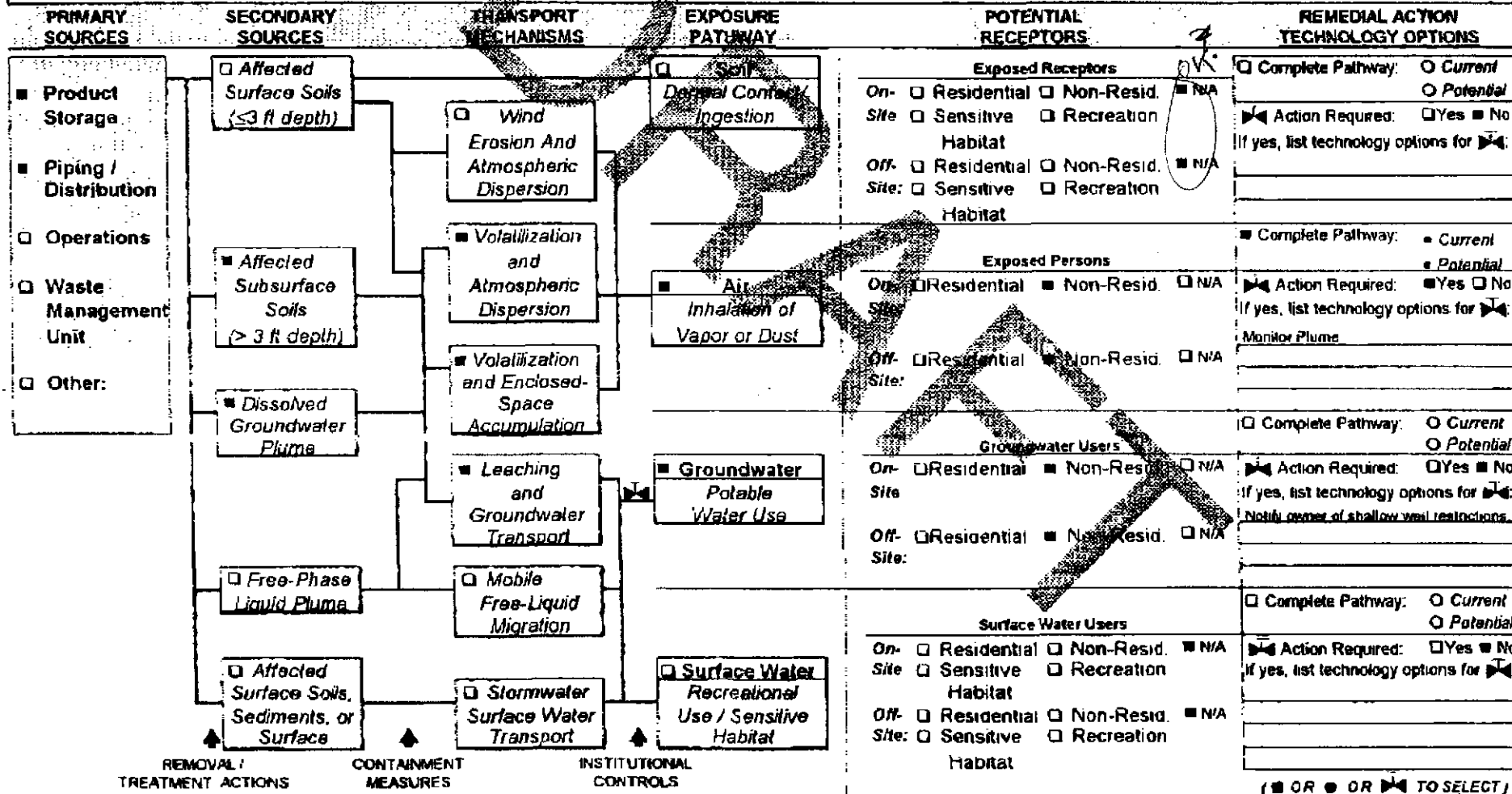
Site Location: Grant Line Road at Interstate 580, Tracy, California

Completed By: Mark Sullivan

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EXPOSURE CONTROL FLOWCHART

Instructions: Identify remedial measures to be implemented to prevent exposure, as follows: • Step 1 - Baseline Exposure: Identify applicable sources, transport mechanisms, and receptors as shown on Worksheet 4.2 (■ = applicable source). • Step 2 - Remedial Measures: Fill in shut-off valves (◀) to indicate removal / treatment action, containment measure, or institutional controls to be used to shut off exposure pathway. • Step 3 - Remedial Technology Options: For each complete pathway, identify category of corrective measure to be applied and list possible technology options in space provided (see options list in RBCA Guidance Manual).



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P. 08

Site Name: Former Chevron Service Station 9-7217

Date Completed: June 28, 1996

Site Location: Grant Line Road at Interstate 580, Tracy, CA

Completed By: Mark Sullivan

Page 1 of 1

SUBSURFACE SOIL CONCENTRATION DATA SUMMARY >3 FT BGS)

Instructions: Indicate type and concentrations of hazardous constituents detected in subsurface soil. Provide statistical data (maximum value, mean value, upper 90% confidence limit on mean) on detected concentrations only. Do not include non-detects from outside of source zone. Select "representative concentration" value for comparison to cleanup standard (ASTL or RBSL) and calculation of baseline risk. Provide detailed lab data table(s) as Appendix A to this report.

CONSTITUENTS DETECTED		ANALYTICAL METHOD		SAMPLE PREPARATION		DETECTED CONCENTRATIONS			SELECTED REPRESENTATIVE CONC. (mg/kg)
		Method No.	Detection Limit (mg/kg)	No. of Samples	No. of Detects	Max Conc. (mg/kg)	Mean Conc. (mg/kg)	Upper 90%CL Conc. (mg/kg)	
CAS No.	Name								
71-43-2	Benzene	EPA 8020	0.005	8	6	0.085	0.016	0.040	0.016
108-88-3	Toluene	EPA 8020	0.005	8	8	0.08	0.15	0.38	0.15
100-41-4	Ethylbenzene	EPA 8020	0.005	8	8	1.7	0.27	0.76	0.27
108-38-3 106-42-3 95-47-6	Xylenes	EPA 8020	0.005	8	8	1.0	0.57	4.46	1.57

Site Name Former Chevron Service Station B-7217

Date Completed June 28, 1996

Site Location Grant Line Road at Interstate 580

Completed By Mark Sullivan

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GROUNDWATER CONCENTRATION DATA SUMMARY

Instructions: Indicate type and concentrations of hazardous constituents detected in groundwater. Provide statistical data (maximum value, mean value, upper 90% confidence limit on mean) on detected concentrations only. Do not include non-detects from outside of source zone. Select "representative concentration" value for comparison to Cleanup standard (CMTL or RBSL) and calculation of baseline risk. Provide detailed lab data table(s) as Appendix A to this report.

CONSTITUENTS DETECTED		ANALYTICAL METHOD		SAMPLE POPULATION		DETECTED CONCENTRATIONS			SELECTED REPRESENTATIVE CONC.
		Method No.	Upper Detection Limit (mg/l)	No. of Samples	No. of Detects	Max Conc. (mg/l)	Mean Conc. (mg/l)	Upper 90% CL Conc. (mg/l)	(mg/l)
CAS No.	Name								
71-43-2	Benzene	EPA 8020	0.0005	13	9	22	6.3	8.6	6.3
108-88-3	Toluene	EPA 8020	0.0005	13	8	30	4.5	7.1	4.5
100-41-4	Ethylbenzene	EPA 8020	0.0005	13	7	2.0	0.46	0.66	0.46
108-38-3 106-42-3 95-47-6	Xylenes	EPA 8020	0.0005	13				3.2	2.1

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RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.2

Site Name: Chevron Station 9-7127

Completed By: Mark Sullivan

Site Location: Grant Line Road at Interstate 580

Date Completed: 6/18/1996

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**SUBSURFACE SOIL RBSL VALUES
(> 3 FT BGS)**

Target Risk (Class A & B) 1.0E-4

MCL exposure limit?

Calculation Option: 1

Target Risk (Class C) 1.0E-4

PEL exposure limit?

Target Hazard Quotient 1.0E+0

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

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			Soil Volatilization to Indoor Air		Soil Volatilization to Outdoor Air		Applicable RBSL	RBSL 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)	<input type="checkbox"/> "If yes"	Only if "yes" left
71-43-2	Benzene	1.6E-2	NA	NA	NA	NA	1.4E+0	NA	6.0E+2	1.4E+0	<input type="checkbox"/>	<1
0-00-0	Benzene CA	1.6E-2	NA	NA	NA	NA	1.4E+0	NA	6.0E+2	1.4E+0	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	2.7E-1	NA	NA	NA	NA	>Res	NA	>Res	>Res	<input type="checkbox"/>	<1
108-88-3	Toluene	1.5E-1	NA	NA	NA	NA	9.3E+1	NA	>Res	9.3E+1	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	1.6E+0	NA	NA	NA	NA	>Res	NA	>Res	>Res	<input type="checkbox"/>	<1

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Serial: G-309-OEX-828

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RBCA SITE ASSESSMENT

Tier 1 Worksheet 5.3

Site Name: Chevron Station 9-7127
 Site Location: Grant Line Road at Interstate 580

Completed By: Mark Sullivan
 Date Completed: 6/18/1996

1 OF 1

GROUNDWATER RBSL VALUES

Target Risk (Class A & B) 1.0E-4 MCL exposure limit?
 Target Risk (Class C) 1.0E-4 PEL exposure limit?
 Target Hazard Quotient 1.0E+0

Calculation Option: 1

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

CONSTITUENTS OF CONCERN		Representative Concentration (mg/L)	Groundwater Ingestion			Groundwater Volatilization to Indoor Air		Groundwater Volatilization to Outdoor Air		Applicable RBSL (mg/L)	RBSL Exceeded ? - "x" if yes. Only if "yes" left	Required CRF
CAS No.	Name		Residential: (on-site)	Commercial: (on-site)	Regulatory (MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)			
71-43-2	Benzene	6.3E+0	NA	NA	NA	NA	1.3E+0	NA	3.2E+2	1.3E+0	<input checked="" type="checkbox"/>	5.0E+00
0-00-0	Benzene CA	6.3E+0	NA	NA	NA	NA	1.3E+0	NA	3.2E+2	1.3E+0	<input checked="" type="checkbox"/>	5.0E+00
100-41-4	Ethylbenzene	4.6E-1	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1
108-88-3	Toluene	4.5E+0	NA	NA	NA	NA	8.5E+1	NA	>Sol	8.5E+1	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	2.1E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1

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RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.2

Site Name: Chevron Service Station 9-7127
 Site Location: Grant Line Road at Interstate 580

Completed By: Mark Sullivan
 Date Completed: 6/13/1996

1 OF 1

**SUBSURFACE SOIL RBSL VALUES
 (> 3 FT BGS)**

Target Risk (Class A & B) 1.0E-6 MCL exposure limit?
 Target Risk (Class C) 1.0E-5 PEL exposure limit?
 Target Hazard Quotient 1.0E+0

Calculation Option: 1

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

CONSTITUENTS OF CONCERN		Representative Concentration (mg/kg)	Soil Leaching to Groundwater			Soil Volatilization to Indoor Air		Soil Volatilization to Outdoor Air		Applicable RBSL (mg/kg)	RBSL Exceeded? <input type="checkbox"/> if yes	Required CRF
CAS No.	Name		Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site) (PEL)	Residential: (on-site)	Commercial: (PEL) (on-site)			
71-43-2	Benzene	1.6E-2	NA	NA	NA	NA	5.1E+2	NA	>Res	5.1E+2	<input type="checkbox"/>	<1
0-00-0	Benzene CA	1.6E-2	NA	NA	NA	NA	5.1E+2	NA	>Res	5.1E+2	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	2.7E-1	NA	NA	NA	NA	>Res	NA	>Res	>Res	<input type="checkbox"/>	<1
108-88-3	Toluene	1.5E-1	NA	NA	NA	NA	>Res	NA	>Res	>Res	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	1.6E+0	NA	NA	NA	NA	>Res	NA	>Res	>Res	<input type="checkbox"/>	<1

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ATTENTION

JUN-26-1996 WED 9:02

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.3

Site Name: Chevron Service Station 9-7127

Completed By: Mark Sullivan

Site Location: Grant Line Road at Interstate 580

Date Completed: 6/13/1998

1 OF 1

GROUNDWATER RBSL VALUES

Target Risk (Class A & B) 1.0E-8

MCL exposure limit?

Calculation Option: 1

Target Risk (Class C) 1.0E-5

PEL exposure limit?

Target Hazard Quotient 1.0E+0

RBSL Results For Complete Exposure Pathways ("X" = Complete)

CONSTITUENTS OF CONCERN		Representative Concentration (mg/L)	Groundwater Ingestion			Groundwater Volatilization to Indoor Air		Groundwater Volatilization to Outdoor Air		Applicable RBSL (mg/L)	RBSL Exceeded ? * <input type="checkbox"/> if yes	Required CRF
CAS No.	Name		Residential (on-site)	Commercial (on-site)	Regulatory (MCL) (on-site)	Residential (on-site)	Commercial (on-site) (PEL)	Residential (on-site)	Commercial (on-site) (PEL)			
71-43-2	Benzene	6.3E+0	NA	NA	NA	NA	4.8E+2	NA	>Sol	4.8E+2	<input type="checkbox"/>	<1
0-00-0	Benzene CA	6.3E+0	NA	NA	NA	NA	4.8E+2	NA	>Sol	4.8E+2	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	4.6E-1	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1
108-88-3	Toluene	4.6E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	2.1E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1

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