CAMBRIA

Transmittal

To:	Ms. Eva Chu
Company:	ACHCSA - Environmental Health Services
Address:	1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502-6577
Phone:	(510) 567-6762
From:	Robert Foss
Phone:	(925) 275-3206
Pages:	10 (including cover)
Date:	September 24, 1999
Re:	Request for Site Closure, Fmr Chevron SS #9-5928, 701 San Pablo Ave., Albany

Dear Ms. Chu:

Attached hereto you will find the document, *Request for Site Closure*, dated September 23, 1999. This is generated in response to our conversations regarding an evaluation of site conditions with respect to risk to human health and the environment. The document contains a site history, site conditions and a RBCA evaluation, along with backup documentation.

Cambria has been advised that the owner intends to sell the property and has a potential buyer. Your efforts in review and evaluation of our request is greatly appreciated.

Please contact me at (925) 973-3126 if you have any questions regarding the data presented herein.

Sincerely,

Robert Foss

Robert Foss
(925) 275-3206

cc: Mr. Rod Simmons, Chevron Products Company
Ms. Ingrid Werner, 22 Kensington Ct., Kensington, California 94707

CAMBRIA

September 23, 1999

Ms. Eva Chu
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Request for Site Closure**
Former Chevron Station 9-5928
701 San Pablo Avenue
Albany, California
Cambria Project No. 310-1582
STID 5347

Dear Ms. Chu:

Cambria Environmental Technology, Inc. (Cambria), on behalf of Chevron Products Company (Chevron), requests case closure for the facility referenced above. This request is based on the results of a Tier 1 risk evaluation that indicates residual hydrocarbon-impacted soil and groundwater do not adversely affect human health or the environment. Based on our review of the site background and conditions, Cambria believes that this site meets the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) definition of a low-risk fuel site, as described in their memorandum "*Interim Guidance on Required Cleanup at Low-Risk Fuel Sites*", dated January 5, 1996. The site background, site conditions, risk evaluation and the applicability of low-risk fuel site criteria are addressed below.

Site Background

The site is a partially paved, flat, vacant lot, located on the southeastern corner of the intersection of San Pablo Avenue and Portland Street in Albany, California (Figure 1). Chevron operated a lessor built station on the site from 1948 until 1978. The lease stated that, upon termination, all facilities, including USTs and lines, were to be left on site. In February 1979, the property owners contracted to remove four gasoline underground storage tanks (USTs). No soil samples were collected according to records prepared by the contractor, which is typical for tank removals in the late 1970s. The site was subsequently leased to a pottery shop.

Oakland, CA
Sonoma, CA
Portland, OR
Seattle, WA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

In December 1988, the property was sold to Ms. Ingrid Werner, the current property owner. In June 1996, one 285 gallon waste oil UST was removed from the southeastern section of the property. The site has remained vacant since that time. Environmental activities at the site are summarized below.

February 1979 Gasoline UST Removals: As mentioned above, four USTs were removed from the northern portion of the site. No samples were collected and no record of environmental conditions exist.

June 1996 Waste Oil UST Removal: In June 1996, a 285 gallon waste oil UST was removed. A soil sample collected from approximately 6.5 ft below ground surface (bgs) contained 310 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHg), 1,300 ppm TPH as diesel (TPHd) and 620 ppm total extractable petroleum hydrocarbons (TEPH) (Attachment A, Figure 5). Soil was over-excavated to approximately 8 ft bgs. A sample from the bottom of the excavation contained 0.2 ppm TPHg and 15 ppm TPHd. Therefore, the majority of hydrocarbon-bearing soil was removed by over-excavation. Soil sample analytic results are presented in Attachment A.

October 1996 Soil Borings: SEMCO, a Redwood City environmental consulting firm, advanced soil borings B-1 through B-6 at the site (Attachment A, Figure 2). The highest TPHg concentration detected was 3,600 ppm in boring B-6. B-6 was located at the southern end of the pump island. Groundwater samples were collected from 3 borings. The highest concentration detected was 20,000 ppb TEPH in B-4, located adjacent to the former waste oil tankpit. No TPHg, TPHd, benzene or SVOCs were detected. Analytic results are presented in Attachment A.

May 1997 Soil Borings: Four additional soil borings (B-7 through B-10) were drilled to further assess the lateral and vertical extent of hydrocarbons in soil and groundwater (Attachment A, Figure 2). Based on results of this investigation excavation of impacted soils was proposed and approved by ACHCSA.

January - February 1998 Soil Boring and Excavation: One additional soil boring (B-11) was drilled north of the former fuel tank cavity (Attachment A, Figure 2). Soil samples contained a maximum of 15 ppm TPHg, 8 ppm TPHd, 16 ppm TPH as motor oil and trace BTEX concentrations. No TPHg and only 2 ppb benzene were detected in the groundwater sample from this boring. The station building and canopy were removed and remedial excavation was conducted in the former pump island area and waste oil tank location. Confirmation soil samples contained a maximum of 2.2 ppm TPHg (Attachment A, Figures 3&4).

Site Conditions

Site Setting: The site is located on the southeastern corner at the intersection of San Pablo Avenue and Portland Avenue. Codornices Creek, the nearest surface water in the assumed downgradient direction, is located approximately 0.7 miles to the south. Cerritos Creek is located approximately 0.3 miles north of the site, in the assumed upgradient direction (Attachment A, Figure 1) . This site is a partially asphalted vacant lot in a mixed commercial/residential area of the city of Albany.

Lithology: Unconsolidated sediments at the site consist primarily of sandy clay to the maximum explored depth of approximately 20 ft bgs. Available boring logs are presented in Attachment B.

Site Hydrogeology: The site is in the East Bay Plain groundwater basin. Groundwater in this basin has been designated beneficial for municipal, industrial and agricultural uses. Depth to groundwater has been measured from 6.6 ft bgs (B-3, Oct 96) to 19.5 ft bgs (B-11, Jan 98).

Preferential Pathways: Sanitary sewer, storm drain, and other utility trenches are likely present in the site vicinity. However, available groundwater data from previous investigations suggest that hydrocarbon impacts to groundwater are minimal and limited to the location of the former tankfield.

Hydrocarbon Distribution in Soil: Analytical results from borings suggest that the majority of residual hydrocarbons at the site exist in the area of the former tankfield (Attachment A, Figures 2&3). Samples EX1-3' and EX1-7', pit samples from within the former tankfield, contained 63 ppm and 360 ppm TPHg, respectively and 49 ppm and 400 ppm TPHd, respectively. In February 1998 the pump island area was excavated and confirmation sampling revealed maximum concentrations of only 2.2 ppm TPHg and 5 ppm TPHd. Waste oil UST compliance samples collected at 8 ft bgs contained only 15 ppm TPHd and 6.2 ppm TPHg. Summary tables of soil analytic results are presented in Attachment A.

Hydrocarbon Distribution in Groundwater: Analytical results from grab groundwater samples collected during field work between October 1996 and February 1998 contained maximum hydrocarbon concentrations of 6,600 ppb TPHg and 22 ppb benzene. No TPHd was detected. These maximum concentrations were obtained in the area of the former tankfield. Additionally, a sample from the waste oil tank excavation contained 20,000 ppb TEPH/TPH-mo. However, no TPHd, TPHg or other hydrocarbons were detected, hence, the compounds detected were thought to be organically derived and not petroleum hydrocarbons. Tables of groundwater analytic results for the site are included in Attachment A.

RISK ASSESSMENT

To assess whether the site conditions pose a risk to human health or the environment, Cambria performed a risk based corrective action (RBCA) analysis for the site. Cambria's risk assessment follows the guidelines set forth by the American Society for Testing and Materials (E-1739-95).[1] The need for a RBCA analysis is driven by the presence of petroleum hydrocarbon compounds beneath the site. Although the site use is likely to be commercial, the property is zoned such that a multistory building could be constructed onsite with commercial use on the first floor and residential use on the upper floors. We therefore assessed the risk to both commercial and residential receptors on site. A conceptual site model (CSM) identifying the source media, the exposure pathways, and the sensitive receptors is described below and summarized in Figure 2.

Conceptual Site Model

Cambria's approach to performing this risk assessment, including development of the site conceptual model for the risk assessment, conducting the Tier 1 analysis, and documenting the need, if any, for future corrective action at the site are presented below.

As the initial step in quantifying the human health risks due to contaminant exposure, Cambria developed a conceptual site model (CSM) of contaminant occurrence, transport, and potential exposure. This CSM is based on review of available hydrogeologic data for the site. Specifically, Cambria reviewed soil and groundwater quality, groundwater elevations and geologic data. In addition, we evaluated future land use and surface features at the site.

Exposure Pathways and Sensitive Receptors

For the purposes of the risk assessment, Cambria conservatively assumed that a mixed-commercial/residential building containing occupants will occupy all or most of the site including the area directly overlying the former USTs (hydrocarbon source area). Therefore, the exposure pathways considered in this risk assessment were:

- Dermal contact/ingestion/inhalation from surface and subsurface soils by on-site commercial and residential receptors, and construction workers;

[1] **Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites**, E 1739-95 (Revised December 1996)· American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

- Inhalation of outdoor air potentially containing chemicals of concern (COCs) volatilized from underlying soil and groundwater by both on-site commercial and residential receptors; and

- Inhalation of indoor air potentially containing COCs volatilized from underlying soil and groundwater by on-site commercial receptors. We assumed the commercial and residential floors of the hypothetical building are not connected and are accessed by separate entrances. Therefore, we do not consider migration of volatilized COCs to residential indoor air a complete pathway.

Any risk to creeks and other surface waters?

Selection of Representative COC Concentrations

Petroleum hydrocarbons, specifically benzene, toluene, ethylbenzene and xylenes (BTEX) and methyl tertiary-butyl ether (MTBE), have been detected in both soil and groundwater samples collected at the site. For purposes of this risk assessment, we consider BTEX and MTBE as site COCs and that hydrocarbons in the saturated zone are represented by groundwater analytical results.

COCs in Soil: The ASTM standard defines two soil intervals: surface and subsurface soil. Surficial soil is defined as the interval from the ground surface to 3.3 ft bgs. Subsurface soil is defined as unsaturated soil below 3.3 ft bgs. In our RBCA analysis, we assumed the 95% upper confidence level (UCL) of the mean COC surface and subsurface soil concentrations were representative of site conditions. These surface and subsurface representative concentrations are presented in Table A.

COCs in Groundwater: For groundwater, we also assumed the 95% UCL concentrations detected in grab groundwater samples collected from soil borings during the 1996 site investigation are representative of site conditions (Attachment B). Our conceptual model for this RBCA analysis and the representative concentrations are presented below in Table A.

Table A - Conceptual Site Model for Risk Assessment

Item			Comment
Contaminant Source Media:	Soil and Groundwater		Hydrocarbons have been detected in soil, groundwater, and soil vapor beneath the site.
Potential Chemicals of Concern (COCs):	BTEX and MTBE		All chemicals detected in representative samples.
Representative Source Concentrations in Surface Soil (mg/kg).	Benzene: Toluene: Ethylbenzene: Xylenes: MTBE:	0.012 0.0096 0.015 0.024 0.0025	95% UCL of the mean COC concentrations detected in soil samples collected less than 3.3 ft bgs during the 1996 site investigation (Attachment B).
Representative Source Concentrations in Soil (mg/kg):	Benzene Toluene. Ethylbenzene: Xylenes MTBE	0.036 0.11 0 13 2.3 0 0025	95% UCL of the mean COC concentrations detected in unsaturated soil samples collected below 3.3 ft bgs during the 1996 site investigation (Attachment B).
Representative Source Concentrations in Groundwater (mg/L):	Benzene: Toluene. Ethylbenzene: Xylenes: MTBE:	0.0048 0.0036 0.0056 0 012 0.00025	95% UCL of the mean COC concentrations detected in grab groundwater samples collected from soil borings during the 1996 site investigation (Attachment B).
Target Carcinogenic Risk Level.	Commercial: Residential:	$1x10^{-5}$ $1x10^{-6}$	Conservative target risk level, considering on-site commercial and residential receptor scenarios.
Non-Carcinogenic Hazard Quotient	1.0		Consistent with ASTM default value.
Benzene Cancer Slope Factor	0 1 (mg/kg/day)$^{-1}$		Defined by Cal-EPA.

BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
MTBE = Methyl-tertiary butyl ether

Tier 1 Analysis

Consistent with the tiered approach of the ASTM RBCA guidelines, Cambria quantified the risk associated with the site COCs by performing a Tier 1 evaluation. As outlined in ASTM E 1739-95, the site-specific COC source concentrations are compared to highly-conservative, generic Tier 1 risk-based screening levels (RBSLs), which are based on simplified equations and generic site conditions.

To facilitate our Tier 1 analysis, we utilized the GSI RBCA Spreadsheet Sheet System.[2] Table B contains the results of this comparison. Benzene is a known carcinogen among BTEX compounds, hence we have presented the Tier 1 results for benzene only in the following table. As shown below in Table B, our RBCA analysis indicates that petroleum hydrocarbon concentrations detected in soil and groundwater beneath the site do not exceed risk-based screening levels for current or future on-site receptors. Results of our Tier 1 analysis for all COCs compounds are presented in Attachment C.

Table B - Results of Tier 1 RBCA Analysis for Benzene

Exposure Pathway	Representative Benzene Concentration	Exposure Point	Receptor Scenario	Target Risk Level	Cal-EPA RBSL	Representative Conc. vs RBSL	
						Exceed	Below
Surface soil	0.012 mg/kg	Ingestion/ inhalation/ dermal contact	Residential	$1x10^{-6}$	0.55		X
			Commercial	$1x10^{-6}$	9.2		X
Volatilization from sub-surface soil	0.036 mg/kg	Outdoor Air	Residential	$1x10^{-6}$	7.1		X
			Commercial	$1x10^{-5}$	100		X
		Indoor Air	Commercial	$1x10^{-5}$	0.23		X
Volatilization from groundwater	0.0048 mg/kg	Outdoor Air	Residential	$1x10^{-6}$	3.1		X
			Commercial	$1x10^{-5}$	53.4		X
		Indoor Air	Commercial	$1x10^{-5}$	0.21		X

RBSL = Risk-based screening level.
All concentrations are in ppm, equivalent to milligrams per kilogram for soil and milligrams per liter for groundwater.

LOW RISK EVALUATION

Based on our review of the site background and conditions, Cambria believes that this site meets the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) definition of a low-risk fuel site, as described in their memorandum "*Interim Guidance on Required Cleanup at Low-Risk Fuel Sites*", dated January 5, 1996. Each of the low-risk groundwater case characteristics, as they related to the site, are discussed below.

---

[2] **RBCA Tier 1 and Tier 2 Spreadsheet System**, ver. 1.01, Groundwater Services Inc. (GSI), 1997, 5252 Westchester, Suite 270, Houston, TX, 77005.

The leak has stopped and the hydrocarbon source has been removed: As mentioned above, the fuel USTs that were the source of potential hydrocarbon releases were removed in February 1979. The waste oil tank was removed in 1996 and product piping, encountered during pump island excavation, was removed in early 1998. Therefore, there is no existing hydrocarbon source. The low hydrocarbon concentrations remaining in soil also indicate that no further potential exists for hydrocarbon impacts to soil and groundwater.

The site has been adequately characterized: The extent of hydrocarbons in soil and groundwater has been fully defined by the phases of site assessment described above.

The hydrocarbon plume is not migrating: Hydrocarbon concentrations in soil and groundwater samples collected at the site indicate that the plume is limited to the area of the former fuel USTs (Attachment A). Therefore, the hydrocarbon plume is not migrating from the site.

No water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted: The site is located in the East Bay Plain groundwater basin. Groundwater in this basin has been designated beneficial for municipal, agricultural and industrial uses. The water-table aquifer in this area is not used as a drinking water supply. The extent of hydrocarbon impact is limited and no known receptors are located in the area. Therefore, no sensitive receptors are likely to be impacted.

The site presents no significant risk to human health or the environment: The RBCA study performed by Cambria, included in this report, has indicated that hydrocarbon concentrations remaining in soil and groundwater at the site do not exceed risk-based screening levels and, therefore, do not pose a risk to future commercial occupants or residential occupants on upper floors.

Conclusions

Based on Cambria's review of site conditions as presented above, this site satisfies the criteria for designation as a low-risk fuel site defined in the January 5, 1996 memorandum referenced above. We therefore, respectfully, request case closure for this site.

CLOSING

Thank you for your review of data supporting closure for this site. Chevron has been advised that the property owner has a potential buyer for the property and all efforts to expedite case closure are sincerely appreciated. Please feel free to contact Robert Foss at (925)-973-3126 or Pete McKereghan at (510) 420-3325 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Robert Foss
Senior Project Geologist

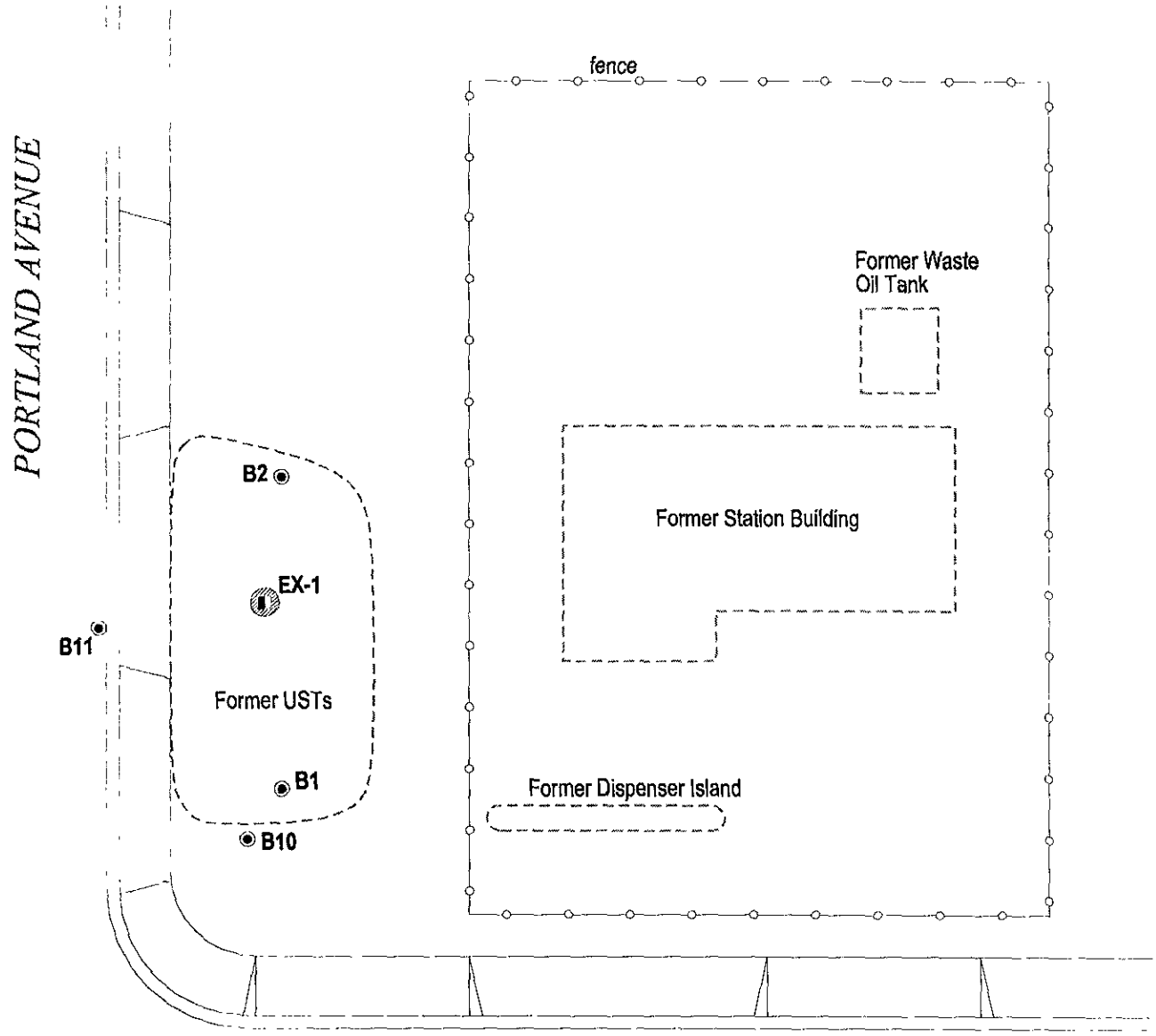
for
Pete McKereghan, R.G.
Principal Scientist

cc: Rod Simmons, Chevron Products Company
Ms. Ingrid Werner, 22 Kensington Ct., Kensington, CA 94707

Figures: Figure 1 - Site Plan
Figure 2 - Conceptual Site Model Exposure Pathways

Attachments A - Soil and Groundwater Analytic Data
B - Available Soil Boring Logs
C - GSI RBCA Output Tables

I:\9-5928 Albany\95928 Closure Request (wRBCA).wpd



EXPLANATION

B1 ◉ *Soil boring location*

EX-1 ⓘ Exploratory pit and soil sample location

0 10 20

Scale (ft)

FIGURE **1**

Former Chevron Service Station 9-5928

701 San Pablo Avenue

Albany, California

CAMBRIA

Site Plan

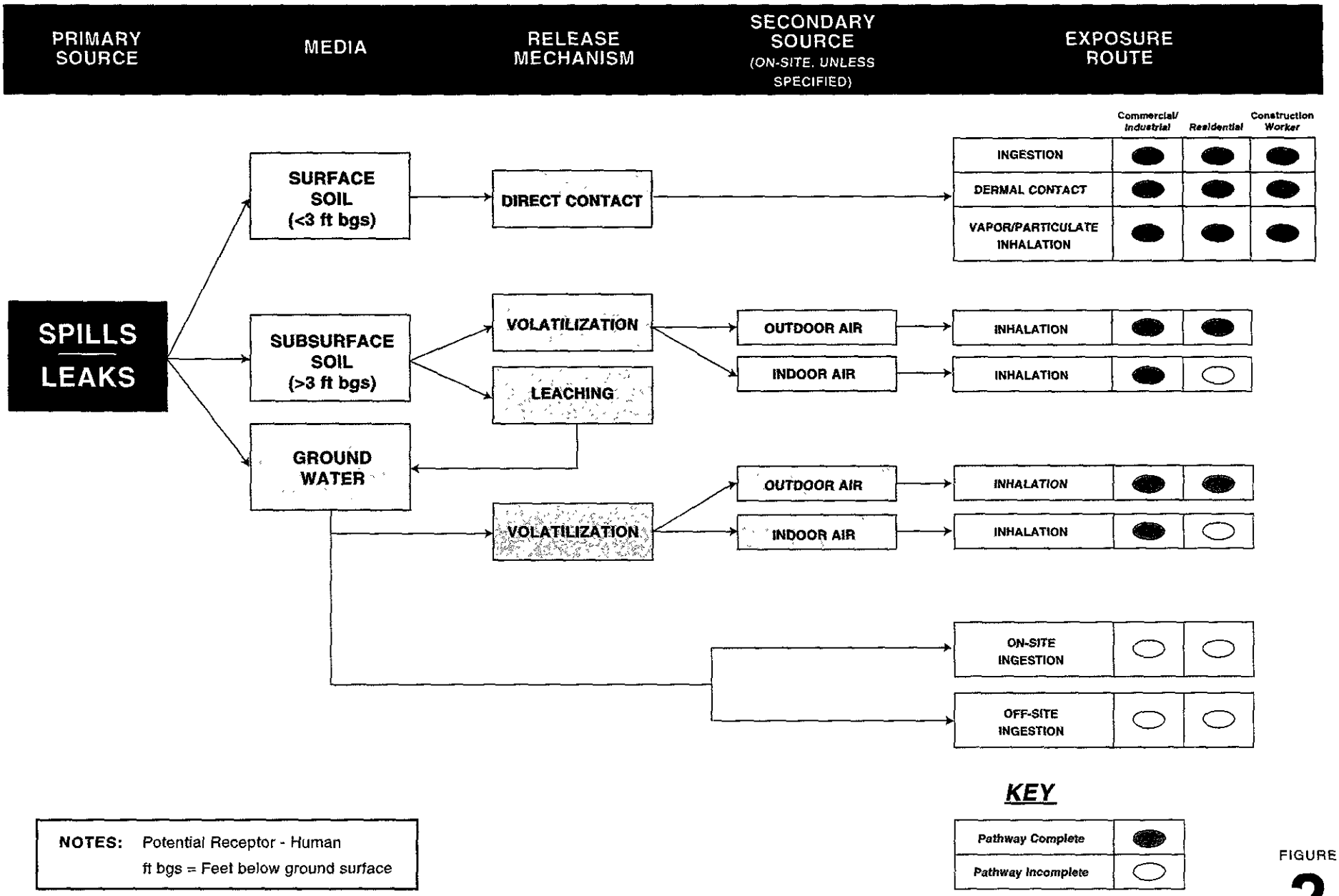


FIGURE
2

I:\9-5928 ALBANY\FIGURES\CNCPT-CHRT.AI

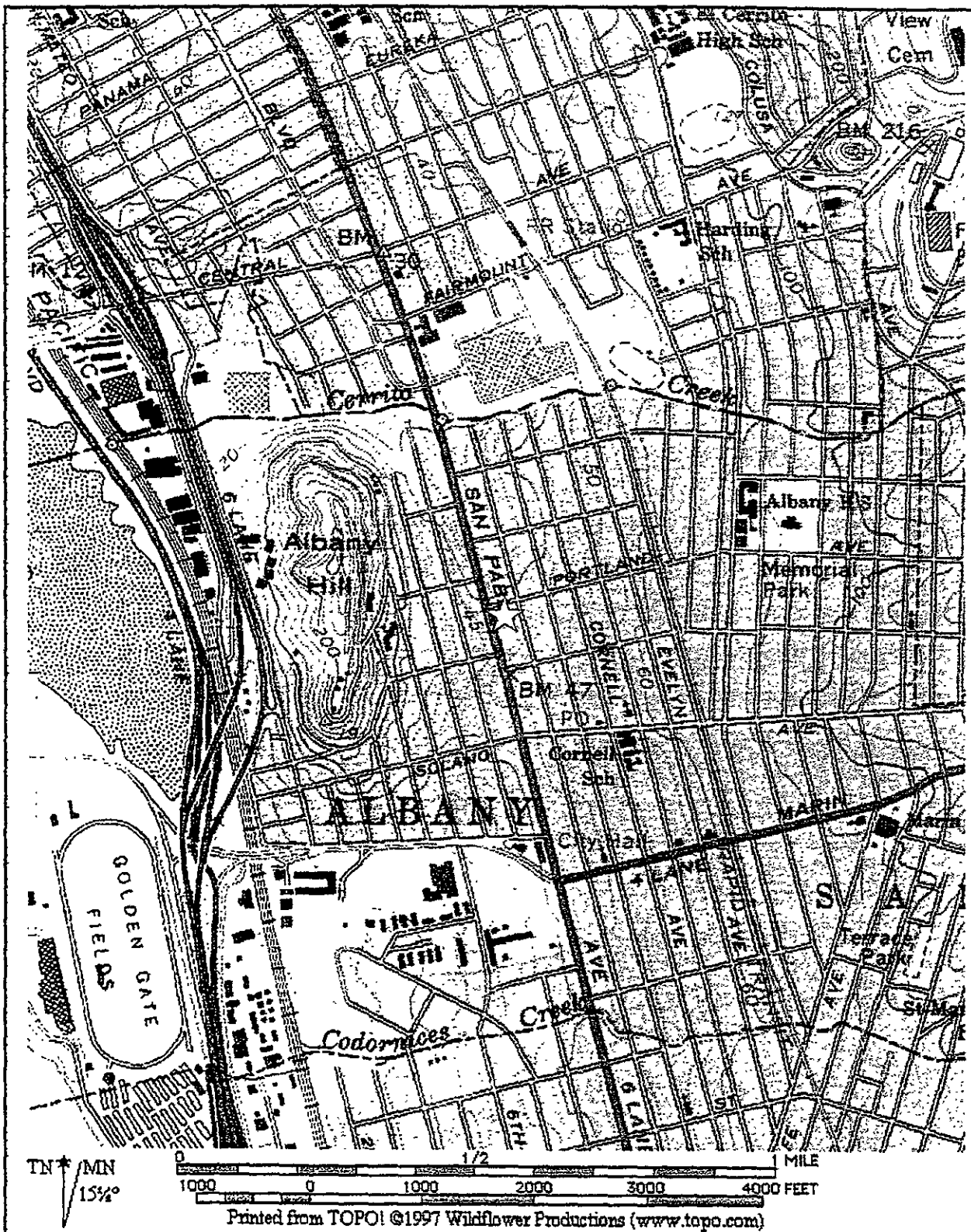
Former Chevron Service Station 9-5928
701 San Pablo Avenue
Albany, California

CAMBRIA

Conceptual Site Model
Exposure Pathways

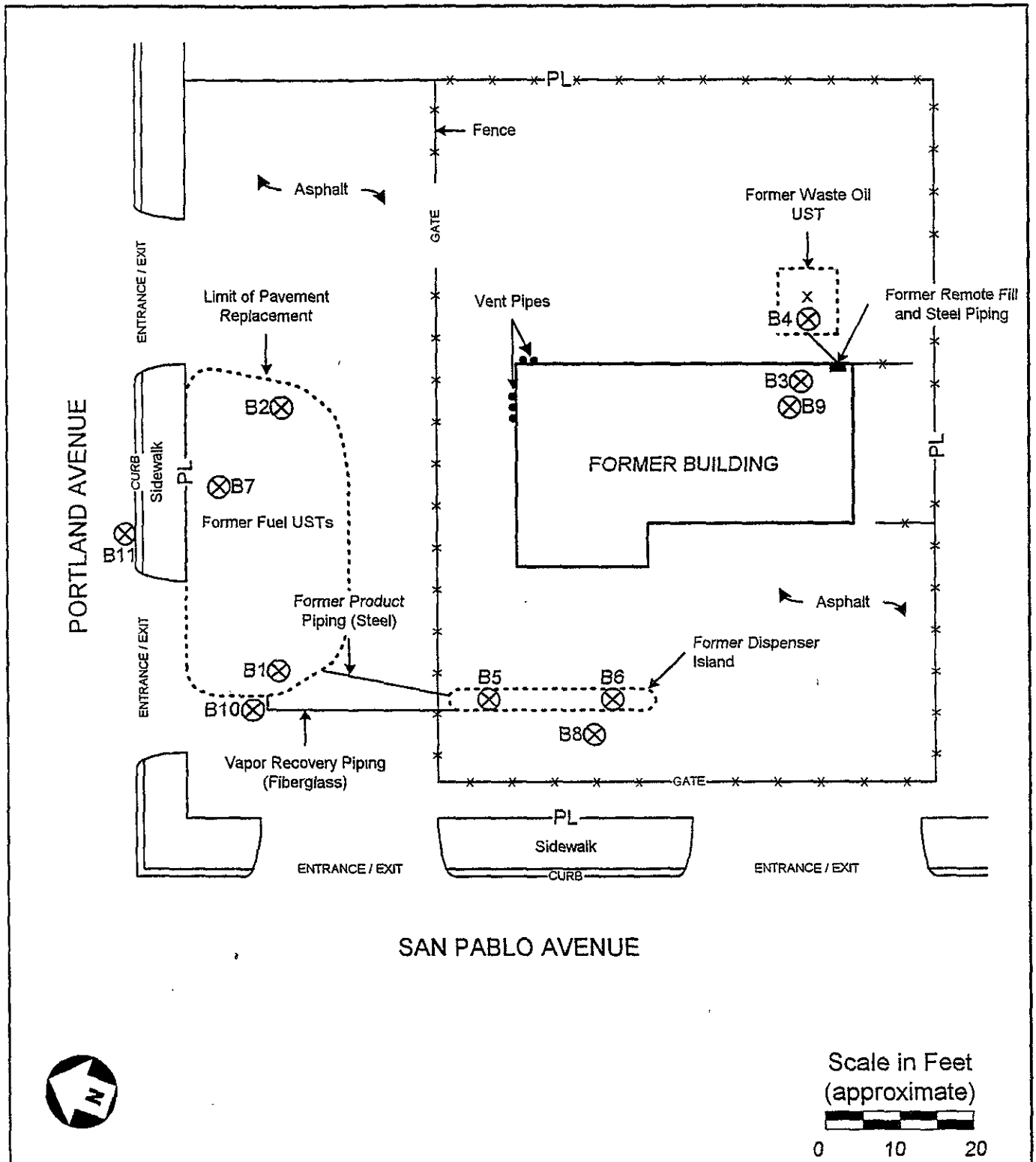
ATTACHMENT A

Soil and Groundwater Analytical Results



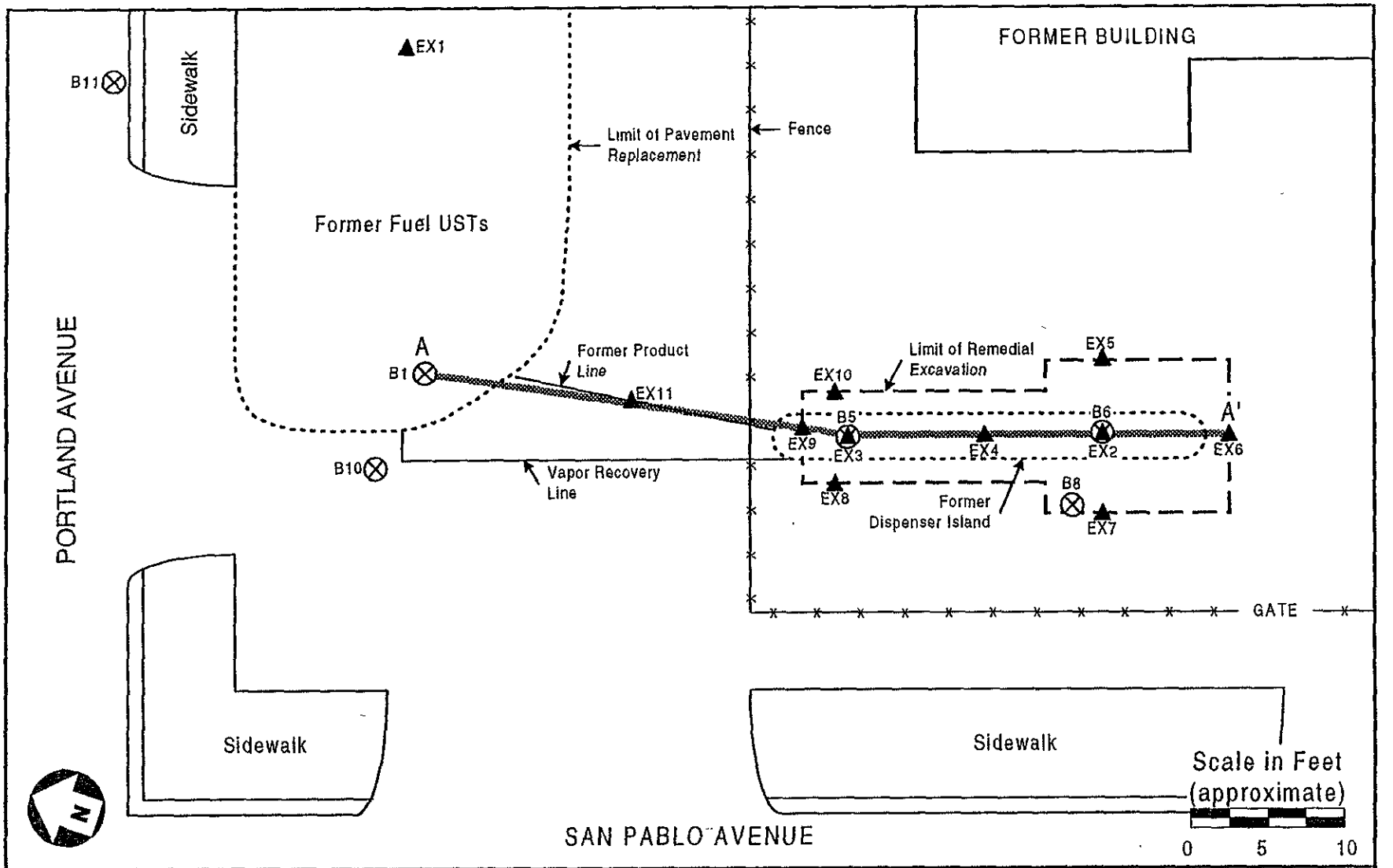
Printed from TOPO! ©1997 Wildflower Productions (www.topo.com)

HK2, Inc./SEMCO 70 Chemical Way Redwood City, California FN: 97-0247.F1 Project: 97-0247.1	**LEGEND** ☆ = Site Location	**Site Location Map** 701 San Pablo Avenue Albany, California **Figure 1**



Note: Borings B1 and B2 penetrated native soil at less than 8 feet below grade (ie. the sidewalls of the excavation either slope toward the center of the excavation or the perimeter of resurfaced pavement is greater than the perimeter of the excavation.

HK2, Inc./SEMCO 70 Chemical Way Redwood City, California Project 97-0247 FN: 97-0247.F2 DWG: MWD 4/98	**LEGEND** ⊗ = Boring x = Soil sample collected during tank removal	**SITE PLAN** Former Chevron Station 701 San Pablo Avenue Albany, California **FIGURE 2**



HK2, Inc./SEMCO
70 Chemical Way
Redwood City, California

Project 97-0247

FN: 97-0247.F3 DWG: MWD 4/98

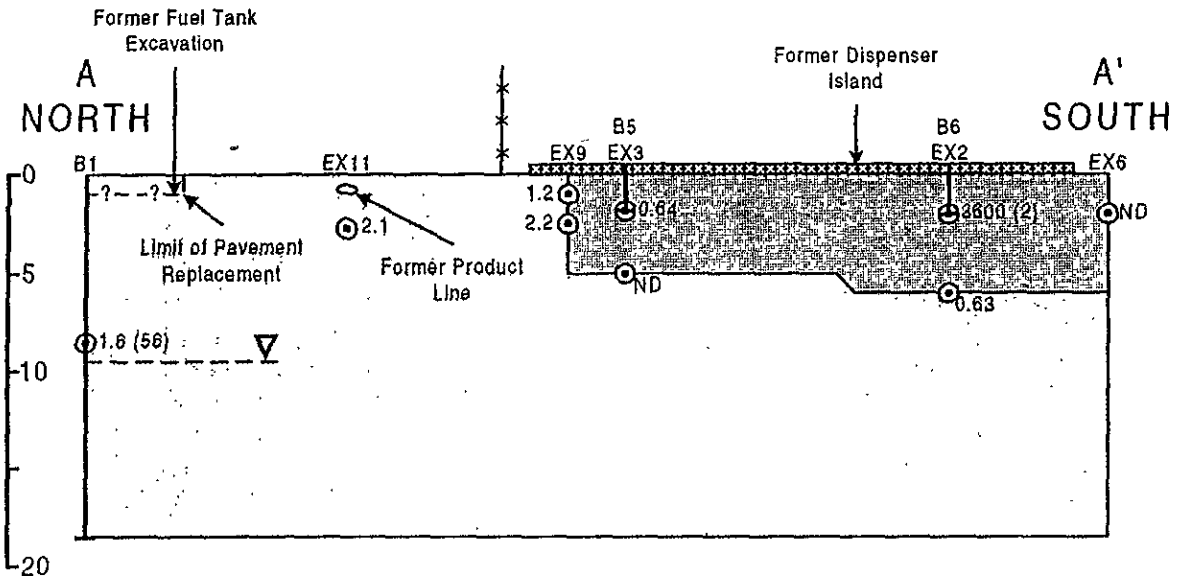
LEGEND

⊗ = Boring

▲ = Excavation soil sample

A — A' = Cross-Section Line

CONFIRMATION SAMPLE LOCATIONS
Former Chevron Station
701 San Pablo Avenue
Albany, California
FIGURE 3



Horizontal and Vertical Scale in Feet (approximate)

0 5 10

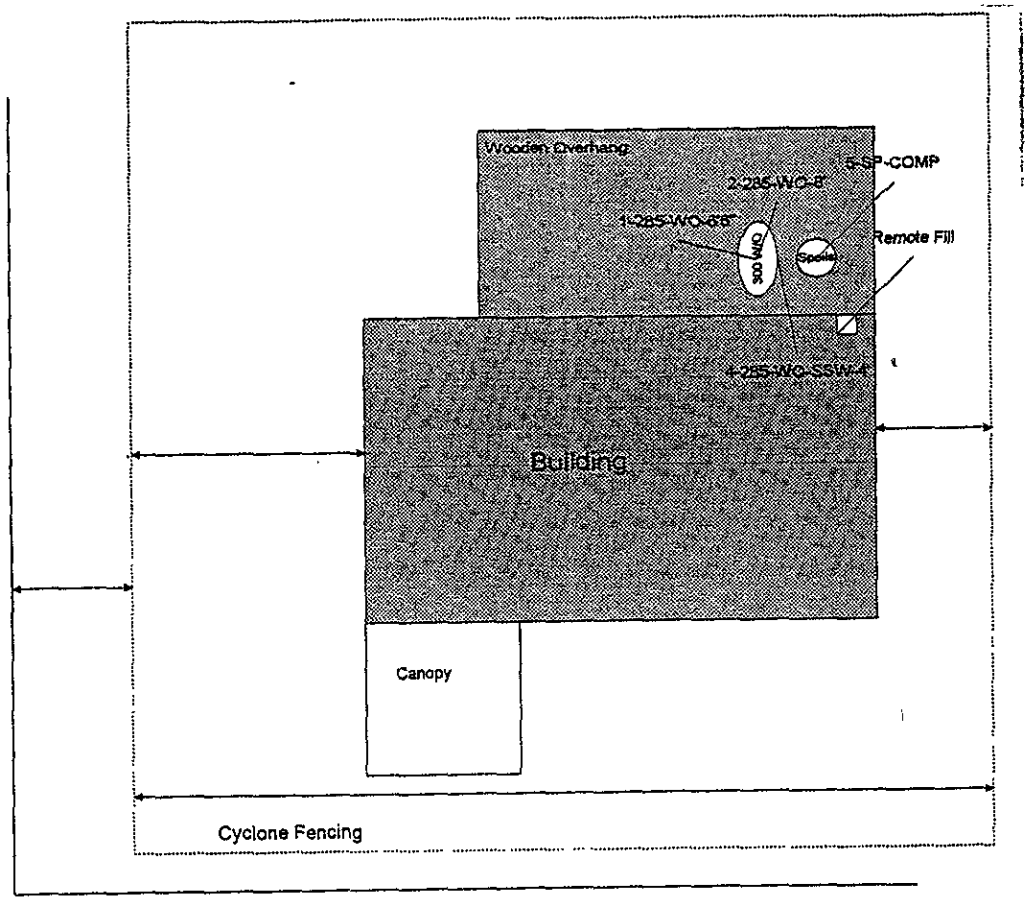
LEGEND

- ⊥ = Boring
- ⊙ = Soil sample showing TPH-G and (TPH-D) concentraion in mg/kg
- ▽ = Depth to groundwater measured in October 1996
- ▭ = Sandy clay
- ▭ = Class II baserock (0 to 2 fbg) underlain by silty sand

HK2, Inc./SEMCO
70 Chemical Way
Redwood City, California

Project 97-0247
FN: 97-0247.F4 DWG: MWD 4/98

CROSS SECTION A-A'
Former Chevron Station
701 San Pablo Avenue
Albany, California
FIGURE 4



INGRID WERNER
701 San Pablo Avenue
Albany, California

Site Layout and Sampling Locations

July 1996

Figure 5

Table 1

Laboratory Results of Soil Sample Hydrocarbon Analyses

Former Chevron Station

701 San Pablo Avenue, Albany, California

Sample Location	Depth (fbg)	TPH-G (mg/kg)	TPH-D (mg/kg)	TEPH/ [TPH-MO] (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	HVOCs (mg/kg)	SVOCs (mg/kg)
W.O. Tank	4	ND	ND	ND	ND	ND	ND	ND	--	ND (≤0.5)	ND
	6.5	310	1,300	620	0.46	5.5	2	8.3	--	ND (≤0.25)	9.9
	8*	6.2	15	--	0.036	0.14	0.088	0.314	--	ND	1.25
B1	8.5	1.6	56	--	0.087	1.1	3.8	470	--	--	--
B2	11.3	2.2	9	ND	0.049	0.180	0.22	0.039	--	--	--
B3	9.3	ND	ND	ND	ND	ND	ND	20	--	--	ND
B4	10	ND	ND	ND	ND	ND	ND	0.018	--	--	ND
B5	2	0.64	ND	ND	ND	ND	ND	0.035	--	--	--
B6	2	3,600	2	ND	ND	0.005	ND	0.045	--	--	--
B8	5	4.5	--	--	ND	ND	0.010	0.043	ND	--	--
	10	0.5	--	--	ND	ND	ND	ND	ND	--	--
	17	ND	--	--	ND	ND	ND	ND	ND	--	--
B11	6.5	ND	--	--	ND	ND	ND	ND	ND	--	--
	8	9	--	--	0.018	0.047	0.016	0.10	ND	--	--
	10	15	8	[ND]	0.024	0.15	0.048	0.074	ND	--	--
	20	0.72	4	[16] #	ND	ND	ND	ND	ND	--	--
Laboratory Reporting Limit		0.5	1.0	50 / [10]	0.005	0.005	0.005	0.010	0.005	≤0.025	≤1.5

LEGEND: TPH-G, TPH-D, TPH-MO = total petroleum hydrocarbons as gasoline, diesel, and motor oil (EPA Method 8015M); TEPH = total extractible petroleum hydrocarbons; B, T, E, X = benzene, toluene, ethylbenzene, and total xylenes, MTBE = methyl tert-butyl ether (EPA Method 8020), HVOCs = halogenated volatile organic compounds (EPA Method 8010); SVOCs = semi-volatile organic compounds (EPA Method 8270); fbg = feet below grade; mg/kg = milligrams per kilogram; ND = concentration less than the laboratory reporting limit; ( ) = laboratory reporting limit if different from value listed in last row of table; – = sample not analyzed for this constituent; * = analyzed 30 to 35 days after sample collected; # = chromatogram does not match typical motor oil pattern.

Table 1 (continued)
Laboratory Results of Soil Sample Hydrocarbon Analyses
Former Chevron Station
701 San Pablo Avenue, Albany, California

Sample Location	Depth (fbg)	TPH-G (mg/kg)	TPH-D (mg/kg)	TEPH/ [TPH-MO] (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	HVOCs (mg/kg)	PAHs (mg/kg)
EX1	3	63	49	[ND]	0.25	0.16	1.3	0.22	ND	--	--
	7	360	400	[ND]	0.18	0.53	0.44	0.64	ND	--	2.79
EX2	6	0.63	--	--	ND	ND	ND	ND	ND	--	--
EX3	5	ND	--	--	ND	ND	ND	ND	ND	--	--
EX5	2	ND	--	--	ND	ND	ND	ND	ND	--	--
EX6	2	ND	--	--	ND	ND	ND	ND	ND	--	--
EX7	2	ND	--	--	ND	ND	ND	ND	ND	--	--
EX8	2	ND	--	--	ND	ND	ND	ND	ND	--	--
EX9	2	1.2	5	[51] #	ND	ND	ND	ND	ND	--	--
	5	2.2	--	--	0.014	0.016	ND	0.013	ND	--	--
EX10	2	ND	--	--	ND	ND	ND	ND	ND	--	--
EX11	3	2.1	--	--	0.021	0.007	ND	ND	ND	--	--
Laboratory Reporting Limit		0.5	1.0	50 / [10]	0.005	0.005	0.005	0.010	0.005	≤0.025	≤1.5

LEGEND: TPH-G, TPH-D, TPH-MO = total petroleum hydrocarbons as gasoline, diesel, and motor oil (EPA Method 8015M); TEPH = total extractible petroleum hydrocarbons; B, T, E, X = benzene, toluene, ethylbenzene, and total xylenes, MTBE = methyl tert-butyl ether (EPA Method 8020), HVOCs = halogenated volatile organic compounds (EPA Method 8010); PAHs = polycyclic aromatic hydrocarbons (EPA Method 8270); fbg = feet below grade; mg/kg = milligrams per kilogram; ND = concentration less than the laboratory reporting limit; ( ) = laboratory reporting limit if different from value listed in last row of table; – = sample not analyzed for this constituent; # = chromatogram does not match typical motor oil pattern.

Table 2

Laboratory Results of Soil Sample Metal Analyses

Former Chevron Station

701 San Pablo Avenue, Albany, California

Sample Location	Depth (feet)	Chromium (mg/kg)	Cadmium (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Lead (mg/kg)	Soluble Lead WET/TCLP (mg/L)
W.O. Tank	4	33	ND	42	26	14	--
	6.5	41	ND	57	92	720	--
	8	74	ND	75	59	20	--
W.O Stockpile	1.5	--	--	--	--	--	10 / 1.1
B1	8.5	--	--	--	--	12	--
B2	11.3	--	--	--	--	8	--
B3	9.3	43	ND	48	24	8	--
B4	10	35	ND	69	41	10	--
B5	2	--	--	--	--	18	--
B6	2	--	--	--	--	11	--
EX1	7	--	--	--	--	100	--
EX9	2	--	--	--	--	6.6	--
Laboratory Reporting Limit		5.0	2.0	5.0	1.0	1.0	0.1 / 0.1

LEGEND: mg/kg = milligrams per kilogram; mg/L = milligrams per liter; ND = concentration less than the laboratory reporting limit; -- = sample not analyzed for this constituent.

Table 3

Laboratory Results of Groundwater Sample Hydrocarbon Analyses

Former Chevron Station

701 San Pablo Avenue, Albany, California

Sample Location	Date	TPH-G (ug/L)	TPH-D (ug/L)	TEPH/ [TPH-MO] (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE (ug/L)	SVOCs (ug/L)	TDS (mg/L)
B-1	10-9-96	310	ND	--	2	3	2	5	--	--	--
B-2	10-9-96	680	ND	--	0.5	1	ND	18	--	--	--
B-3	10-24-96	ND	ND	20,000	ND	ND	ND	ND	--	ND	--
B-8	5-8-97	ND	--	--	ND	ND	ND	ND	ND	--	990
B-11	1-23-98	ND	--	--	2	3	3	9	ND	--	--
EX1	2-11-98	6,600	--	--	22	5	27	9	ND	--	--
CRWQCB MSWQO		none	none	none	1	150	700	1,750	none	varies	500
Lab Reporting Limit		50	50	5,000	0.5	0.5	0.5	1.0	0.5	≤500	1

LEGEND: TPH-G, TPH-D, TPH-MO = total petroleum hydrocarbons as gasoline, diesel, and motor oil (EPA Method 8015M); TEPH = total extractible petroleum hydrocarbons; B, T, E, X = benzene, toluene, ethylbenzene, and total xylenes, MTBE = methyl tert-butyl ether (EPA Method 8020), SVOCs = semi-volatile organic compounds (EPA Method 8270); TDS = total dissolved solids (EPA Method 160.1); ug/L = micrograms per liter; mg/L = milligrams per liter; CRWQCB MSWQO = California Regional Water Quality Control Board municipal supply water quality objective; ND = concentration less than the laboratory reporting limit; -- = sample not analyzed for this constituent.

Table 4

Laboratory Results of Groundwater Sample Metal Analyses

Former Chevron Station

701 San Pablo Avenue, Albany, California

Sample Location	Date	Cadmium (mg/L)	Chromium (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Lead (mg/L)
B-1	10-9-96	--	--	--	--	ND
B-2	10-9-96	--	--	--	--	ND
B-3	10-24-96	ND	ND	ND	ND	ND
CRWQCB MSWQO		0.005	0.05	0.1	5	0.05
Laboratory Reporting Limit		0.01	0.015	0.01	0.02	0.01

LEGEND: mg/L = milligrams per liter; CRWQCB MSWQO = California Regional Water Quality Control Board municipal supply water quality objective; ND = concentration less than the laboratory reporting limit; -- = sample not analyzed for this constituent.

ATTACHMENT B

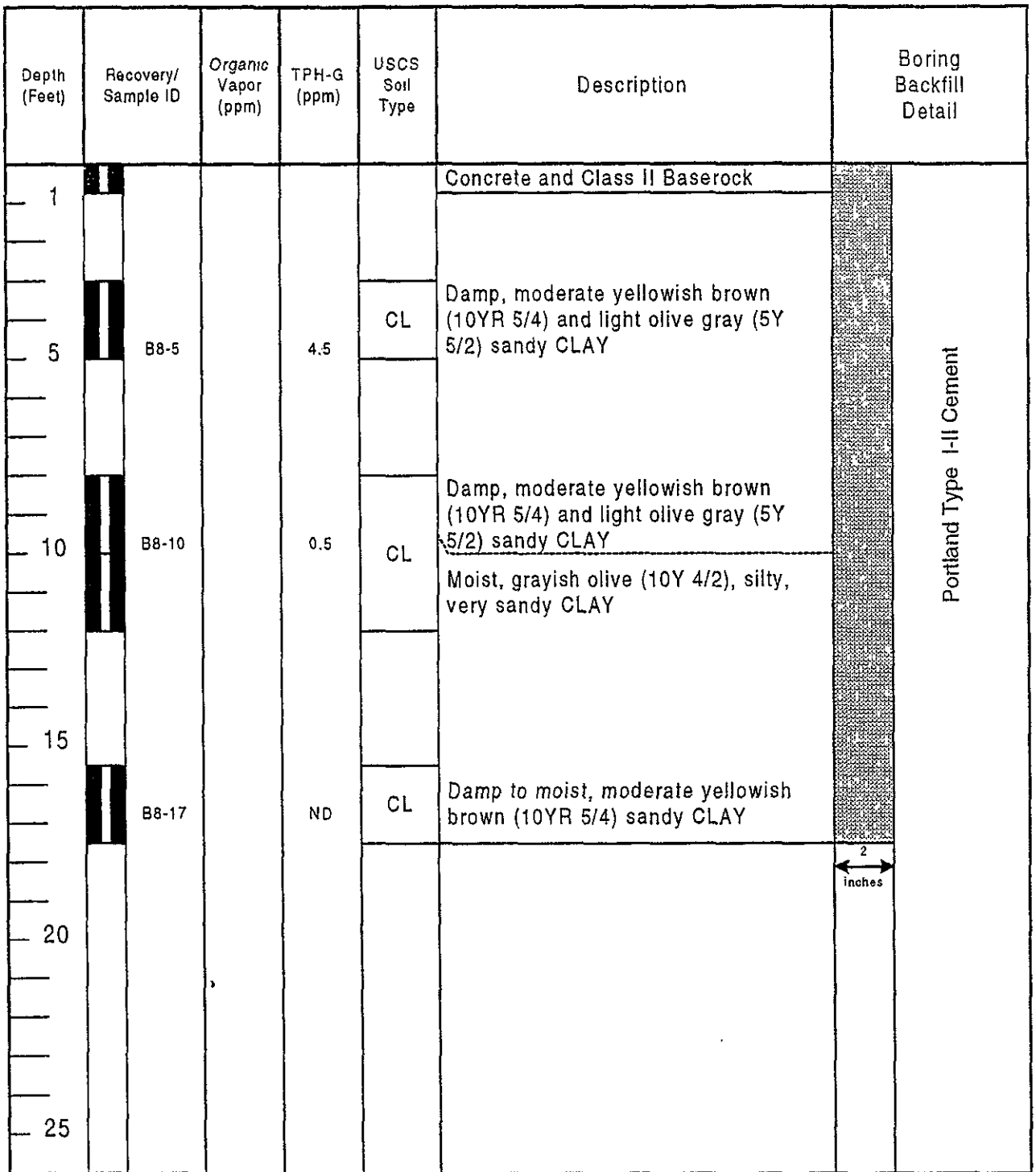
Available Soil Boring Logs

Depth (Feet)	Recovery/ Sample ID	Blow Counts	Organic Vapor (ppm)	USCS Soil Type	Description	Boring Backfill Detail
1					Asphalt and Class II Baserock	Asphalt
				GP	Gravel	Portland Type I-II Cement
						2 inches
5						
10						
15						
20						
25						

BORING NUMBER:	B7
LOCATION:	Former Chevron Station 701 San Pablo Ave. Albany, CA
PROJECT NO:	97-0247
DRILLING CONTRACTOR:	HK2, Inc./SEMCO
DRILLING METHOD:	Percussion
DRILLING DATE:	5-6-97
LOGGED BY:	K. Craig

REMARKS:

Boring terminated at 2 feet below grade



BORING NUMBER:	B8
LOCATION:	Former Chevron Station 701 San Pablo Ave. Albany, CA
PROJECT NO:	97-0247
DRILLING CONTRACTOR:	HK2, Inc./SEMCO
DRILLING METHOD:	Percussion
DRILLING DATE:	5-6-97
LOGGED BY:	K. Craig

REMARKS:

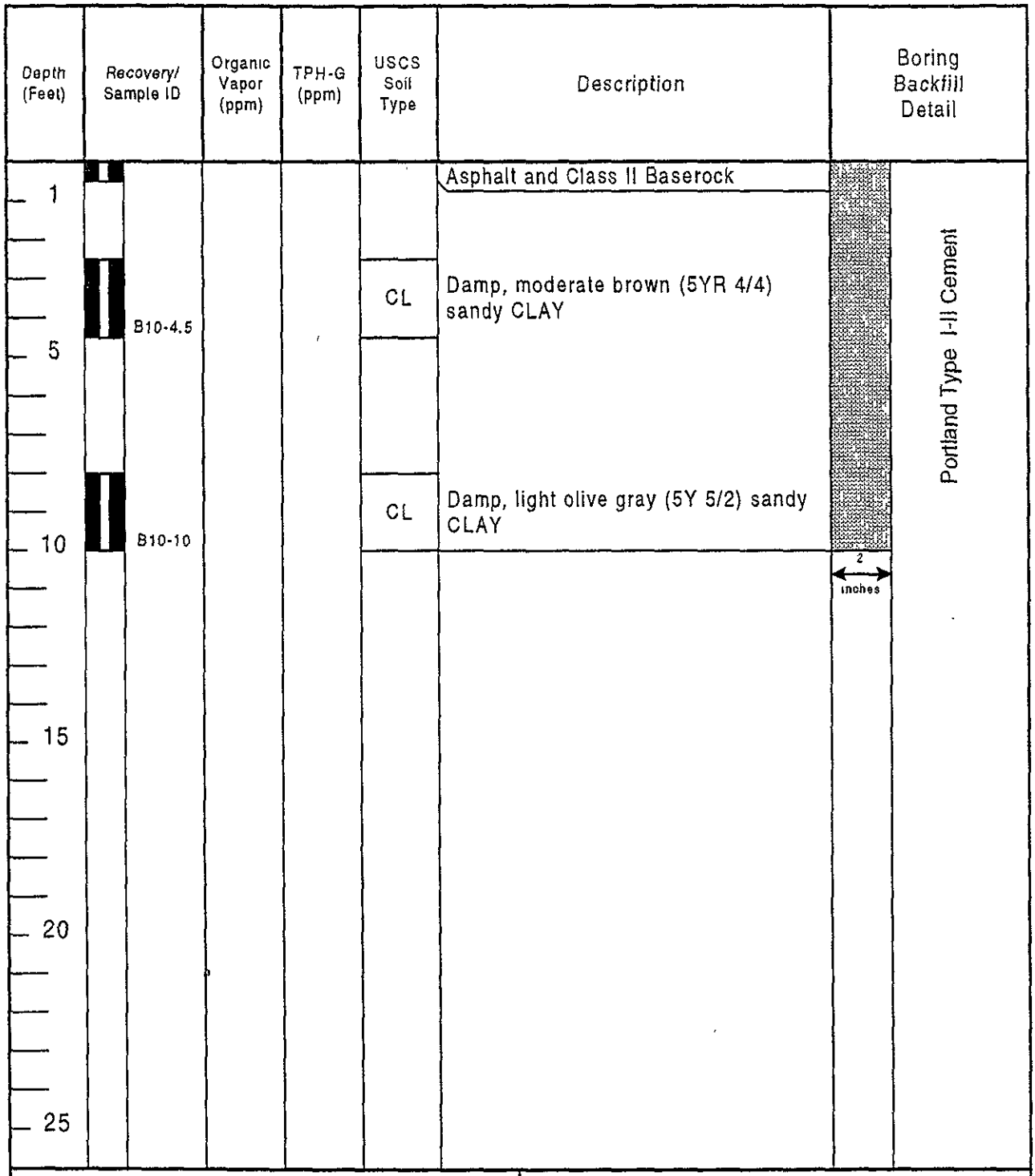
Boring terminated at 17.5 feet below grade
TPH-G = total petroleum hydrocarbons as gasoline
ppm = parts per million
ND = TPH-G concentration below laboratory reporting limit

Depth (Feet)	Recovery/ Sample ID	Organic Vapor (ppm)	TPH-G (ppm)	USCS Soil Type	Description	Boring Backfill Detail
1					*Concrete and Class II Baserock*	Portland Type I-II Cement
				CL	Damp, moderate brown (5YR 4/4) sandy CLAY	
5						
					No soil samples were collected because samples collected from boring B3 previously characterized this area.	
10						
15						
20						2 inches
25						

BORING NUMBER:	B9
LOCATION:	Former Chevron Station 701 San Pablo Ave. Albany, CA
PROJECT NO:	97-0247
DRILLING CONTRACTOR:	HK2, Inc./SEMCO
DRILLING METHOD:	Percussion
DRILLING DATE:	5-6-97
LOGGED BY:	K. Craig

REMARKS:

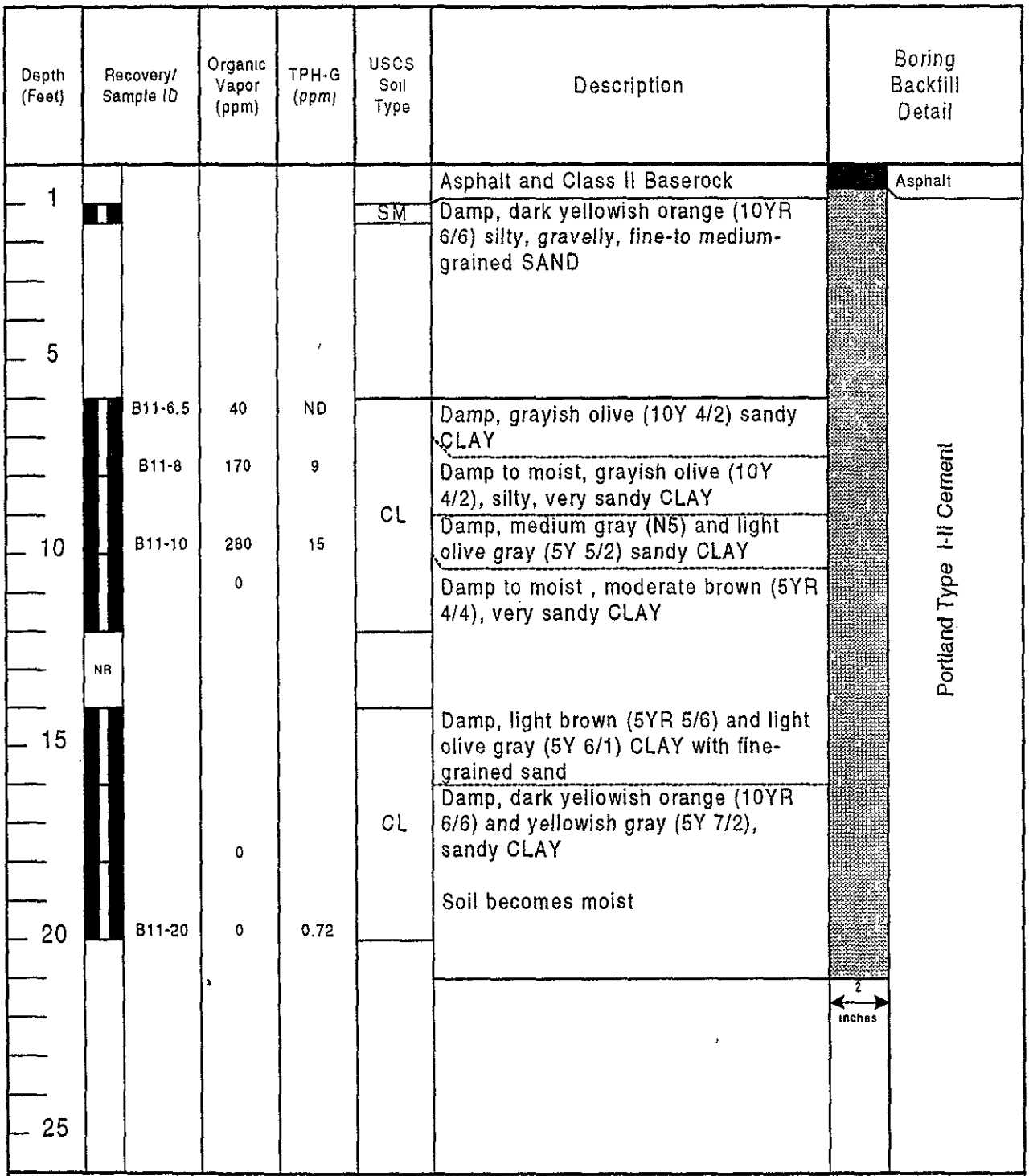
Boring terminated at 20 feet below grade
TPH-G = total petroleum hydrocarbons as gasoline
ppm = parts per million



BORING NUMBER:	B10
LOCATION:	Former Chevron Station 701 San Pablo Ave. Albany, CA
PROJECT NO:	97-0247
DRILLING CONTRACTOR:	HK2, Inc./SEMCO
DRILLING METHOD:	Percussion
DRILLING DATE:	5-6-97
LOGGED BY:	K. Craig

REMARKS:

Boring terminated at 10 feet below grade
TPH-G = total petroleum hydrocarbons as gasoline
ppm = parts per million



BORING NUMBER:	B11
LOCATION:	Former Chevron Station 701 San Pablo Ave. Albany, CA
PROJECT NO:	97-0247
DRILLING CONTRACTOR:	HK2, Inc./SEMCO
DRILLING METHOD:	Percussion
DRILLING DATE:	1-23-98
LOGGED BY:	D. Milano

REMARKS:

Boring terminated at 21 feet below grade (fbg)
Depth to water was approximately 19.5 fbg
TPH-G = total petroleum hydrocarbons as gasoline
ppm = parts per million
ND = TPH-G concentration below laboratory reporting limit
NR = no recovery

ATTACHMENT C

GSI RBCA Output Tables

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Chevron 9-5928 | Job Identification: 310-1582 | Software: GSI RBCA Spreadsheet
Site Location: 701 San Pablo Ave., Albany | Date Completed: 07/06/99 | Version: 1.0.1
Completed By: PFM

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

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
t	Averaging time for vapor flux (yr)	30			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
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	TRUE	FALSE	FALSE
S.v	Volatilization from Subsurface Soils	TRUE	FALSE	
GW.v	Volatilization from Groundwater	TRUE	FALSE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	FALSE	
GW.b	Vapors from Groundwater	FALSE	FALSE	
Soil Pathways:				
SS.d	*Direct Ingestion and Dermal Contact*	*TRUE*	*FALSE*	*FALSE*
Groundwater Pathways:				
GW.I	Groundwater Ingestion	FALSE	FALSE	
S.I	Leaching to Groundwater from all Soils	FALSE	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		TRUE
S	Inhalation receptor (cm)		TRUE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
TRc	Target Risk (class C carcinogens)	***1.0E-06***	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	1	
Tier	RBCA Tier	1	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	2.2E+06	1.0E+06
W	Length of affect. soil parallel to wind (cm)	1.5E+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)	1.0E+02	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

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 seepage 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)	
phi.eff	Effective porosity in water-bearing unit	3.8E-01
foc sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value	capillary	vadose	foundation
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 subsurface soil (cm)	1.0E+02			
Lsubs	Thickness of affected subsurface soils (cm)	2.0E+02			
pH	*Soil/groundwater pH*	6.5			
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	***0.001***	

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

RBCA SITE ASSESSMENT | **Tier 1 Worksheet 6.1**

Site Name: Chevron 9-5928 | Completed By: PFM

Site Location: 701 San Pablo Ave., Albany | Date Completed: 7/6/1999

SURFACE SOIL RBSL VALUES (< 3.3 FT BGS)

Target Risk (Class A & B) 1.0E-6 | ☐ MCL exposure limit? | Calculation Option 1

Target Risk (Class C) 1.0E-6 | ☐ 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			X	Ingestion, Inhalation and Dermal Contact		Construction Worker	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)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.2E-2		NA	NA	NA		5.5E-1	NA	NA	5.5E-1	☐	<1
100-41-4	Ethylbenzene	1.5E-2		NA	NA	NA		>Res	NA	NA	>Res	☐	<1
1634-04-4	Methyl t-Butyl Ether	2.5E-3		NA	NA	NA		1.2E+2	NA	NA	1.2E+2	☐	<1
108-88-3	Toluene	9.6E-3		NA	NA	NA		>Res	NA	NA	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	2.4E-2		NA	NA	NA		>Res	NA	NA	>Res	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet | Serial: G-273-IBX-894

Version: 1.0.1

RBCA SITE ASSESSMENT | **Tier 1 Worksheet 6.2**

Site Name: Chevron 9-5928 | *Completed By: PFM*

Site Location: 701 San Pablo Ave , Albany | Date Completed: 7/6/1999

SUBSURFACE SOIL RBSL VALUES (> 3.3 FT BGS)

Target Risk (Class A & B) 1.0E-6 ☐ MCL exposure limit? Calculation Option: 1

Target Risk (Class C) 1.0E-6 ☐ 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	X	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)	"■" If yes	Only if "yes" left
71-43-2	Benzene	3.6E-2	NA	NA	NA	NA	NA	7.1E+0		NA		7.1E+0	☐	<1
100-41-4	*Ethylbenzene*	1.3E-1	NA	NA	NA	NA	NA	>Res		NA		>Res	☐	<1
1634-04-4	Methyl t-Butyl Ether	2.5E-3	NA	NA	NA	NA	NA	>Res		NA		>Res	☐	<1
108-88-3	Toluene	1.1E-1	NA	NA	NA	NA	NA	>Res		NA		>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	2.3E+0	NA	NA	NA	NA	NA	>Res		NA		>Res	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software GSI RBCA Spreadsheet Serial: G-273-IBX-894
Version: 1.0.1

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.3

Site Name. Chevron 9-5928 | Completed By: PFM

Site Location: 701 San Pablo Ave , Albany | Date Completed: 7/6/1999

GROUNDWATER RBSL VALUES

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

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

CONSTITUENTS OF CONCERN		Representative Concentration		Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential (on-site)	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
71-43-2	Benzene	4.8E-3	NA	NA	NA	NA	2.1E-1	NA	5.3E+1	2.1E-1	☐	<1
100-41-4	Ethylbenzene	5.6E-3	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
1634-04-4	Methyl t-Butyl Ether	2.5E-4	NA	NA	NA	NA	3.7E+3	NA	>Sol	3.7E+3	☐	<1
108-88-3	Toluene	3.6E-3	NA	NA	NA	NA	8.5E+1	NA	>Sol	8.5E+1	☐	<1
1330-20-7	Xylene (mixed isomers)	1.2E-2	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software GSI RBCA Spreadsheet *Serial G-273-IBX-894*

Version: 1.0 1

Site Name: Chevron 9-5928
Site Location: 701 San Pablo Ave., Albany

Completed By: PFM
Date Completed: 7/6/1999

TIER 1 SURFACE SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
71-43-2	Benzene	5.0E-03	10	2	2.5E-01	4.9E-03	1.2E-02
100-41-4	Ethylbenzene	5.0E-03	10	1	1.3E+00	4.7E-03	1.5E-02
1634-04-4	Methyl t-Butyl Ether	5.0E-03	8	0	0.0E+00	2.5E-03	2.5E-03
108-88-3	Toluene	5.0E-03	10	3	1.6E-01	4.5E-03	9.6E-03
1330-20-7	Xylene (mixed isomers)	1.0E-02	10	3	2.2E-01	1.1E-02	2.4E-02

Site Name: Chevron 9-5928
Site Location: 701 San Pablo Ave., Albany

Completed By: PFM
Date Completed: 7/6/1999

TIER 1 SUBSURFACE SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
71-43-2	Benzene	5.0E-03	9	5	1.8E-01	1.3E-02	3.6E-02
100-41-4	Ethylbenzene	5.0E-03	9	5	3.8E+00	2.4E-02	1.3E-01
1634-04-4	Methyl t-Butyl Ether	5.0E-03	5	0	0.0E+00	2.5E-03	2.5E-03
108-88-3	Toluene	5.0E-03	9	5	1.1E+00	2.4E-02	1.1E-01
1330-20-7	Xylene (mixed isomers)	1.0E-02	9	8	4.7E+02	2.2E-01	2.3E+00

Site Name: Chevron 9-5928 | Completed By: PFM
Site Location: 701 San Pablo Ave., Albany | Date Completed: 7/6/1999 | 1 of 1

TIER 1 GROUNDWATER CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/L)	No. of Samples	No. of Detects	Maximum Conc. (mg/L)	Mean Conc. (mg/L)	UCL on Mean Conc. (mg/L)
71-43-2	Benzene	5.0E-04	6	4	2.2E-02	1.2E-03	4.8E-03
100-41-4	Ethylbenzene	5.0E-04	6	3	2.7E-02	1.2E-03	5.6E-03
1634-04-4	Methyl t-Butyl Ether	5.0E-04	3	0	0.0E+00	2.5E-04	2.5E-04
108-88-3	Toluene	5.0E-04	6	4	5.0E-03	2.1E-03	3.6E-03
1330-20-7	Xylene (mixed isomers)	1.0E-03	6	4	1.8E-02	7.0E-03	1.2E-02