

QUARTERLY GROUNDWATER MONITORING
LIVERMORE ARCADE SHOPPING CENTER
FIRST STREET AND SOUTH P STREET
LIVERMORE, CALIFORNIA

3/18/91

Prepared for:

Grubb & Ellis Realty Income Trust
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San Francisco, California 94104

Prepared by:

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March 18, 1991

Project No. 48016.04

MW4/R0318ARC

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1.1 Purpose and Scope of Work

This is the first quarterly groundwater monitoring report performed at the Livermore Arcade Shopping Center property located in Livermore, California, hereinafter referred to as the "Site." The investigation was conducted on behalf of Grubb & Ellis Realty Income Trust, referred to in this report as "Grubb & Ellis."

The purpose of this investigation is to monitor the concentration of tetrachloroethene (also known as perchloroethylene, perk, or PCE) discovered in the groundwater at the Site. Benzene, toluene, total xylene isomers, and ethylbenzene (BTXE), common components of gasoline, were also detected in the groundwater at the Site.

Hygienetics will evaluate the analytical results and present findings to the Regional Water Quality Control Board (RWQCB) on behalf of Grubb & Ellis. This investigation is subject to the terms and limitations included as Appendix C of this report.

1.2 Site Location

Livermore is located approximately 25 miles east of San Francisco Bay along Highway 580 (Figure 1). The Livermore Arcade Shopping Center is located at the northwest corner of First Street and South P Street in downtown Livermore, California. Railroad Avenue borders the Site to the north. South S Street borders the Site to the west.

1.3 Site Description

The Site is listed at the Alameda County Assessor's Office on Map 98, Page 403, Parcel 8-4. The Livermore Arcade Shopping Center, which was built in 1972, houses fourteen businesses [twelve (12) retail stores and two (2) restaurants]. The Site occupies approximately 11.75 acres, including the asphalt parking areas. Site topography is relatively flat with runoff moving to the north and west. Ornamental vegetation consists of grass, ivy, bushes, and small trees. The Site is located in a critical groundwater recharge area.

1.4 Introduction

Hygienetics is currently working on the final design of a groundwater extraction system which was approved by the Alameda County Department of Environmental Health and the State of California Regional Water Quality Control Board. The quarterly

monitoring plan began on March 5, 1991, when Hygienetics collected a groundwater sample from each of the five monitoring wells shown in Figure 2. These wells were chosen as the best sampling locations to monitor the PCE concentrations over time.

1.5 Groundwater Monitoring Well Installation

Monitoring wells were installed at various times between March and October 1990. The monitoring wells were constructed in accordance with the Alameda County Zone 7 permitting and construction procedures. Monitoring wells were constructed of 2.0 and 4.0 inch inner diameter, flush-jointed, Schedule 40 PVC risers attached to factory-perforated, slotted PVC well screen sections. The base of each well was fitted with a threaded PVC plug. The annuli between the screen and the auger hole were packed with #2 or #3 Grade Monterey Sand to at least two feet above the screen. A three-foot thick bentonite pellet plug was then placed above the sand. The remaining annular spaces around the riser sections were grouted with neat cement to near grade. A cast iron christie box, with galvanized steel apron, was set in concrete over each well and finished flush with the surrounding asphalt. The top of each well casing was fitted with a watertight, locking cap.

1.6 Groundwater Sampling and Analysis

A groundwater sample was collected from each of the five wells on March 5, 1991. Prior to sampling, a minimum of three standing volumes of water were purged from each well utilizing a pre-cleaned teflon bailer. The associated equipment was cleaned between each well with de-ionized water to minimize the potential for cross contamination. All samples were immediately placed on ice and transported under chain of custody protocol to BC Analytical in Emeryville, California. Chain of custody records are included in Appendix B.

The groundwater samples were analyzed for volatile organics by EPA Method 624. The level of the PCE concentration detected at each groundwater monitoring well is listed in Table 1. The laboratory data is included in Appendix A.

TABLE 1
 Summary of Analytical Results
 Groundwater Samples

<u>Sample Location</u>	<u>Parameter</u>	<u>Concentration (ug/l)</u>	<u>Date Sampled</u>
MW6	Tetrachloroethene*	43	03/05/91
MW7	Trichloroethene	190	03/05/91
	Tetrachloroethene*	1,700	
	cis-1,2-Dichloroethene	37	
MW9	Chloroform	2	03/05/91
MW13	Tetrachloroethene*	34	03/05/91
MW14	Methylene Chloride	6	03/05/91

* Also known as perchloroethylene, perk, PCE

mg/l = micrograms per liter (equivalent to parts per billion)

1.7 Results and Discussion

The aerial extent of the PCE plume has remained the same as previously shown in Hygienetics Subsurface Investigation, October 12, 1990 (Figure 2).

The PCE concentration in groundwater at monitoring well MW7 increased from 900 ug/l, as reported in the October 1990 report, to 1700 ug/l detected in this recent sampling. Compounds suspected to be degradation products of the PCE are present in the groundwater at monitoring well MW7.

No gasoline compounds were detected in this latest groundwater sampling.


Methylene chloride, detected in the groundwater samples collected from monitoring well MW14, is a solvent commonly used in laboratories as part of the extraction process. It is sometimes accidentally introduced to the sample during the analysis.

Chloroform was detected in groundwater at monitoring well MW9. In this case, it may be a by-product of chlorine which is used as a disinfectant in potable water systems.

The next quarterly sampling of these monitoring wells will be in June 1991.

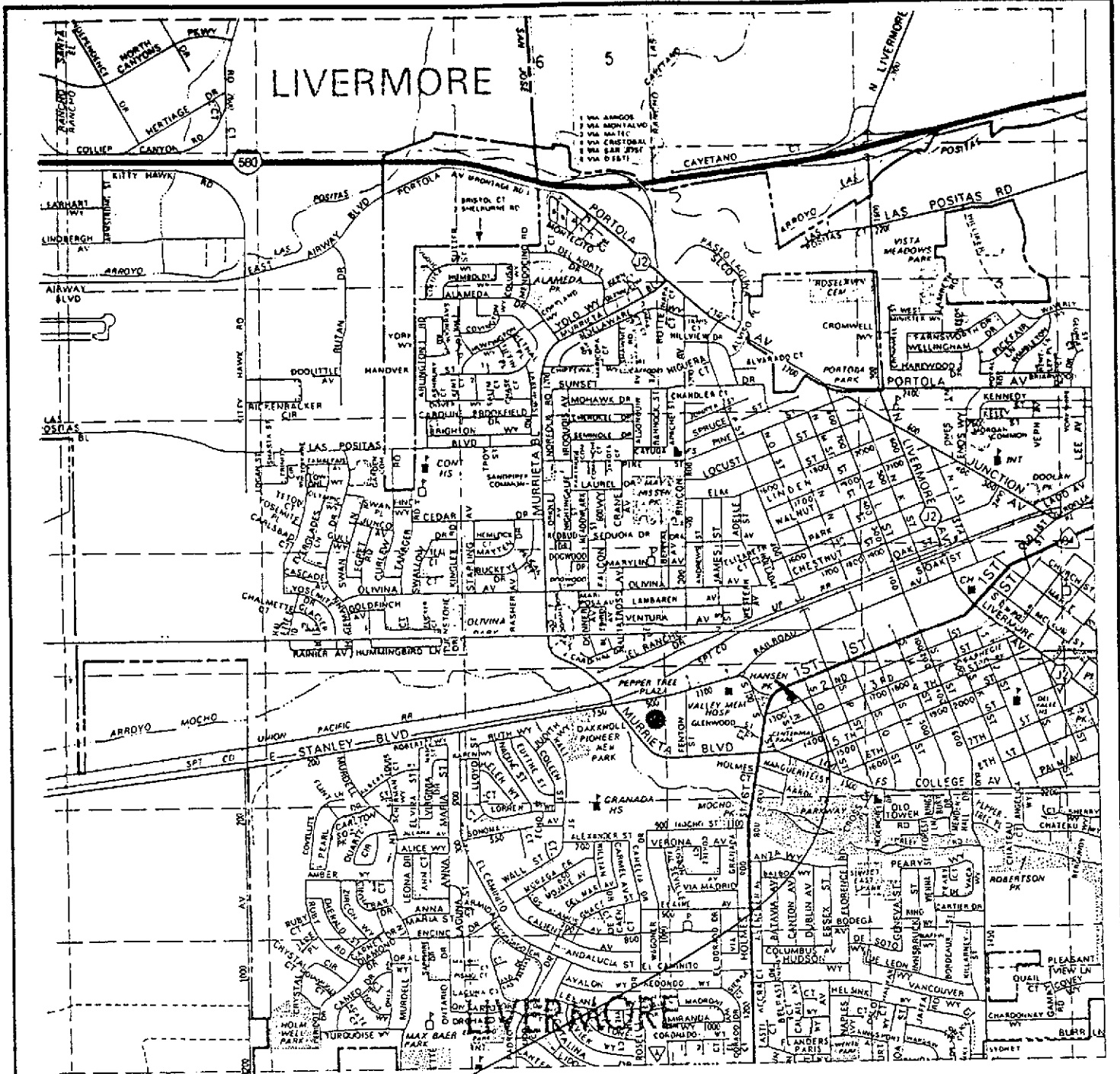
Sincerely,

HYGIENETICS, INC.

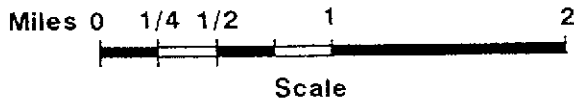

Michael Wright, H.E.A.
Environmental Geologist


MW: nnp/48016.04

MW4/R0318ARC



SITE LOCATION

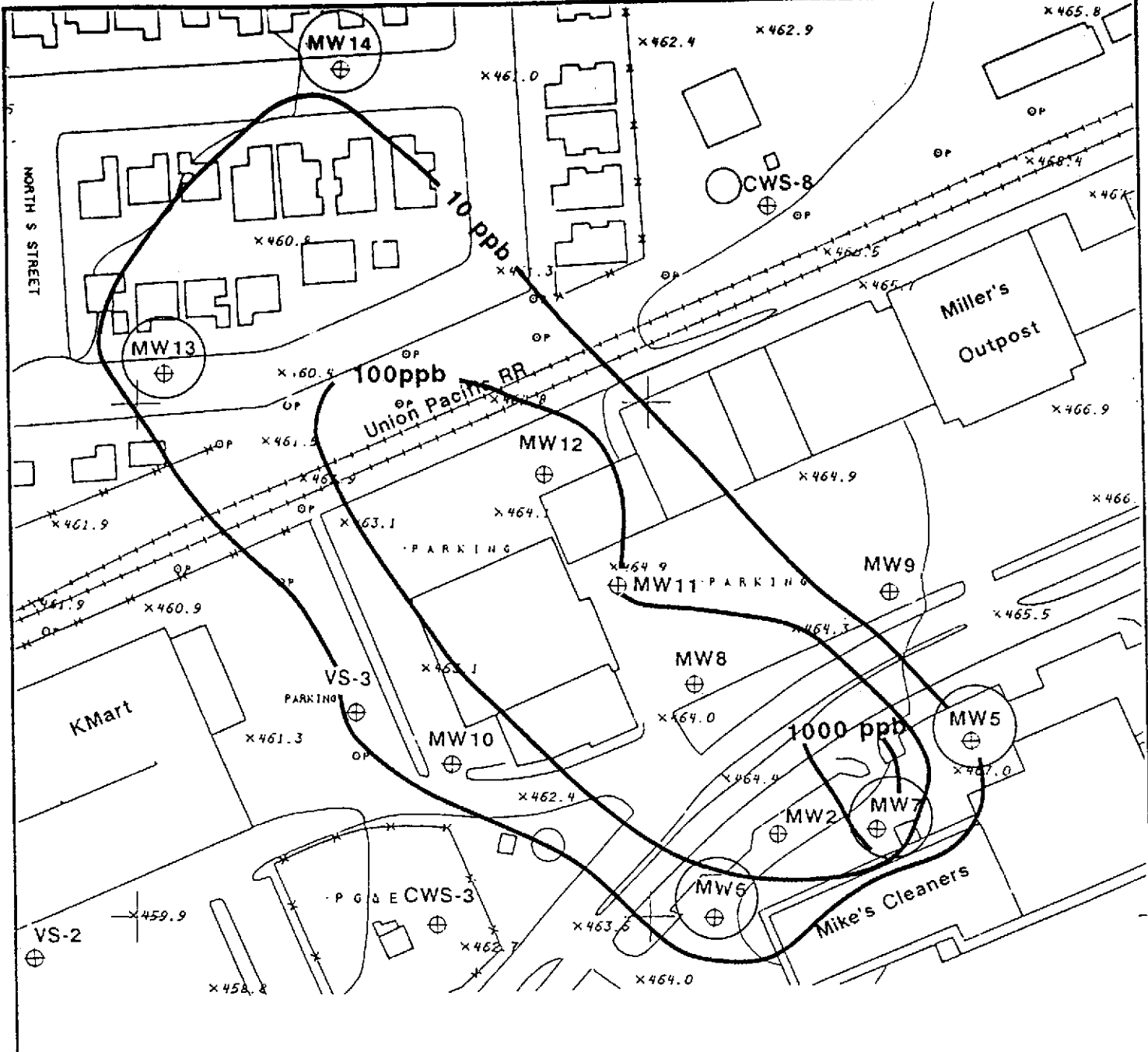


<p>SITE MAP ARCADE SHOPPING CENTER</p> <p>Livermore, California</p>	 <p>Hygienetics Inc. Industrial Hygienists Architects / Engineers Environmental Consultants</p>	PROJECT NO. 48016.04	FIGURE 1	DATE 3/91
		DRN. BY		
		REV. DATE	DESCRIPTION	

159219

MAKEPEACE

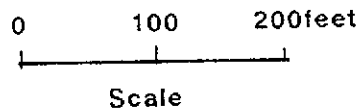
FIGURE 2
PCE CONCENTRATION DISTRIBUTION AND
WELL LOCATION MAP




LEGEND

- MW10
⊕ Hygienetics Monitoring Well
- VS-1
⊕ Versar Monitoring Well
- CWS-3
⊕ California Water Service Well

-  MW7
⊕ Sampled Monitoring Well



PCE DISTRIBUTION
ARCADE SHOPPING CENTER
Livermore, California

 **Hygienetics Inc.**
Industrial Hygienists
Architects / Engineers
Environmental Consultants

PROJECT NO. 48016.04	FIGURE 2	DATE 3/91
DRN. BY		
REV. DATE DESCRIPTION		

159219

MAKEPEACE

APPENDIX A
ANALYTICAL RESULTS FOR
GROUNDWATER SAMPLES

Analytical Report

LOG NO: E91-03-113

Received: 05 MAR 91
Mailed : 21 MAR 91

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Project: Arcade

REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
03-113-1	MW-6	05 MAR 91
03-113-2	MW-7	05 MAR 91
03-113-3	MW-9	05 MAR 91
03-113-4	MW-13	05 MAR 91
03-113-5	MW-14	05 MAR 91

PARAMETER	03-113-1	03-113-2	03-113-3	03-113-4	03-113-5
Volatile Organics (EPA 624)					
Date Analyzed	03.07.91	03.12.91	03.07.91	03.07.91	03.15.91
Date Extracted	03.07.91	03.12.91	03.07.91	03.07.91	03.15.91
Dilution Factor, Times	1	20	1	1	1
1,1,1-Trichloroethane, ug/L	<1	<20	<1	<1	<1
1,1,2,2-Tetrachloroethane, ug/L	<1	<20	<1	<1	<1
1,1,2-Trichloroethane, ug/L	<1	<20	<1	<1	<1
1,1-Dichloroethane, ug/L	<1	<20	<1	<1	<1
1,1-Dichloroethene, ug/L	<1	<20	<1	<1	<1
1,2-Dichloroethane, ug/L	<1	<20	<1	<1	<1
1,2-Dichlorobenzene, ug/L	<1	<20	<1	<1	<1
1,2-Dichloropropane, ug/L	<1	<20	<1	<1	<1
1,3-Dichlorobenzene, ug/L	<1	<20	<1	<1	<1
1,4-Dichlorobenzene, ug/L	<1	<20	<1	<1	<1
2-Chloroethylvinylether, ug/L	<1	<20	<1	<1	<1
2-Hexanone, ug/L	<1	<20	<1	<1	<1
4-Methyl-2-Pentanone, ug/L	<1	<20	<1	<1	<1
Acetone, ug/L	<10	<200	<10	<10	<10
Acrolein, ug/L	<10	<200	<10	<10	<10
Acrylonitrile, ug/L	<10	<200	<10	<10	<10
Bromodichloromethane, ug/L	<1	<20	<1	<1	<1
Bromomethane, ug/L	<1	<20	<1	<1	<1
Benzene, ug/L	<1	<20	<1	<1	<1

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03-113-1	MW-6	05 MAR 91				
03-113-2	MW-7	05 MAR 91				
03-113-3	MW-9	05 MAR 91				
03-113-4	MW-13	05 MAR 91				
03-113-5	MW-14	05 MAR 91				
PARAMETER	03-113-1	03-113-2	03-113-3	03-113-4	03-113-5	
Bromoform, ug/L	<1	<20	<1	<1	<1	
Chlorobenzene, ug/L	<1	<20	<1	<1	<1	
Carbon Tetrachloride, ug/L	<1	<20	<1	<1	<1	
Chloroethane, ug/L	<1	<20	<1	<1	<1	
Chloroform, ug/L	1	<20	2	<1	<1	
Chloromethane, ug/L	<1	<20	<1	<1	<1	
Carbon Disulfide, ug/L	<1	<20	<1	<1	<1	
Dibromochloromethane, ug/L	<1	<20	<1	<1	<1	
Ethylbenzene, ug/L	<1	<20	<1	<1	<1	
Freon 113, ug/L	<1	<20	<1	<1	<1	
Methyl ethyl ketone, ug/L	<20	<400	<1	<20	<20	
Methylene chloride, ug/L	<5	<100	<5	<5	6	
Styrene, ug/L	<1	<20	<1	<1	<1	
Trichloroethene, ug/L	<1	190	<1	<1	<1	
Trichlorofluoromethane, ug/L	<1	<20	<1	<1	<1	
Toluene, ug/L	<1	<20	<1	<1	<1	
Tetrachloroethene, ug/L	43	1700	<1	34	<1	
Vinyl acetate, ug/L	<1	<20	<1	<1	<1	
Vinyl chloride, ug/L	<1	<20	<1	<1	<1	
Total Xylene Isomers, ug/L	<1	<20	<1	<1	<1	
cis-1,2-Dichloroethene, ug/L	<1	37	<1	<1	<1	
cis-1,3-Dichloropropene, ug/L	<1	<20	<1	<1	<1	
trans-1,2-Dichloroethene, ug/L	<1	<20	<1	<1	<1	

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03-113-1	MW-6	05 MAR 91
03-113-2	MW-7	05 MAR 91
03-113-3	MW-9	05 MAR 91
03-113-4	MW-13	05 MAR 91
03-113-5	MW-14	05 MAR 91

PARAMETER	03-113-1	03-113-2	03-113-3	03-113-4	03-113-5
trans-1,3-Dichloropropene, ug/L	<1	<20	<1	<1	<1

Gary Blake for

Sim D. Lessley, Ph.D., Laboratory Director

CHAIN OF CUSTODY RECORD

ARCADE

BCA Log Number 91103113

Client name Hygienetics				Project or PO#		Analyses required									
Address 2200 Powell St.				Phone # 715 547 3886		<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Hazardous sample Special handling required </div>									
City, State, Zip Emeryville 94608				Report attention Michael Wright											
Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by	Number of containers	Remarks									
1	6/3/5	2:50pm	GW	40 ml VOA	1	✓									
2	7/3/5	3:45	GW	40 ml VOA	1	✓									
3	9/3/5	2:15	GW	40 ml VOA	1	✓									
4	13/3/5	1:45	GW	40 ml VOA	1	✓									
5	14/3/5	12:55	GW	40 ml VOA	1	✓									

Signature	Print Name	Company	Date	Time
<i>[Signature]</i>	Michael Wright	Hygienetics	3/5/91	4:50pm
<i>[Signature]</i>	P. THONGKHUM	BCA	3/5/91	4:50
Relinquished by				
Received by				
Relinquished by				
Received by				
Relinquished by				
Received by Laboratory				

- BC ANALYTICAL**
- 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
 - 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
 - 1200 Pacifico Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge
GW—Groundwater SO—Soil OT—Other PE—Petroleum

Disposal arrangements: _____

Limitations

The findings set forth in the attached Site Assessment Report are strictly limited in time and scope to the date of the evaluation(s). The conclusions presented in the Report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed upon services or the time and budgeting restraints imposed by the client.

The purpose of this report was to assess the physical characteristics of the subject Site with respect to the presence in the environment of hazardous material or oil. No specific attempt was made to check on the compliance of present or past owners or operators of the Site with federal, state or local laws and regulations; environmental or otherwise.

Partial findings of this investigation are based on data provided by others. No warranty is expressed or implied with the usage of such data. Much of the information provided in this report is based upon personal interviews and research of available documents, records and maps held by the appropriate government and private agencies. This is subject to the limitations of historical documentation, available and accuracy of pertinent records, and the personal recollection of those persons contacted by Hygienetics.

Observations were made of the Site and of structures on the Site as indicated within the Report. Where access to portions of the Site or structures on the Site were unavailable or limited, Hygienetics is unable to render an opinion as to the presence or indirect evidence relating to hazardous material or oil, in that portion of the Site or structure. In addition, Hygienetics renders no opinion as to the presence of hazardous material or oil, where direct observations of the interior walls, floors or ceilings of a structure on a Site was obstructed by objects or coverings on or over these surfaces.

The initial Site investigation took into account the natural and man-made features of the Site, including any unusual or suspect phenomenon. These factors combined with the Site's geology, hydrology, topography, and past and present land uses served as a basis for choosing a methodology and location for surface sampling. indeed surface sampling was conducted. The surface data, if provided is meant as a representative overview of the Site.

The conclusions and recommendations contained in this report may be based in part upon various types of chemical data and are contingent upon their validity. As indicated within the Report, some of these data are preliminary "screening" level data, and should be confirmed with qualitative analysis if more specific information is necessary. It should be noted that variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time and other factors. Should additional data or variations of current data become available in the future, this data should be reviewed, and the conclusions and recommendations presented herein modified accordingly.

Chemical analysis may have been performed for specific parameters during the course of this Site assessment, as described in the text. However, it should be noted that additional chemical constituents not searched for during the current study may be present in soil and/or groundwater at the Site.

The presence of radioactive materials, biological hazards and asbestos was not investigated unless specifically noted otherwise.