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**QUARTERLY GROUNDWATER REPORT**

**5800 CHRISTIE AVENUE,  
EMERYVILLE, CALIFORNIA**

**MAY 3, 1992**

**SUBMITTED TO:**

**MR. BRIAN OLIVA  
ALAMEDA COUNTY HEALTH CARE SERVICES  
HAZARDOUS MATERIALS DIVISION  
80 SWAN WAY, ROOM 200  
OAKLAND, CALIFORNIA 94621**

**PREPARED FOR :**

**CROLEY & HERRING INVESTMENT COMPANY  
448 THARP DRIVE,  
MORAGA, CALIFORNIA 94556**

**PREPARED BY:**

**ETS**

**ENVIRONMENT & TECHNOLOGY SERVICES  
638 BLAIR AVENUE,  
PIEDMONT, CALIFORNIA 94611  
TELEPHONE: 510-601-1263  
FACIMILE: 510-601-1793**

**ETS**  
**ENVIRONMENT & TECHNOLOGY SERVICES**

**638 BLAIR AVENUE, PIEDMONT, CALIFORNIA 94611**  
**PHONE 510-601-1263 FAX 510-601-1793**

May 3, 1992

Mr. Dick Herring  
President  
Croley & Herring Investment Company  
448 Tharp Avenue,  
Moraga, California 94556

Subject: **Quarterly Groundwater Report**  
**5800 Christie Avenue, Emeryville, California**

Dear Mr. Herring:

Enclosed please find a copy of the quarterly groundwater report for the April, 1992 water sampling period at the subject facility.

Please contact me if you have any question about this report.

Sincerely,



Walter W. Loo, RG CEG  
President

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## 1.0 INTRODUCTION

Environmental & Technology Services (*ETS*) was retained by Croley & Herring Investment Company to performed the 9th quarterly groundwater monitoring for the facility located at 5800 Christie Street in Emeryville, California. The subject facility is currently leased to an electronic merchandise retailer. Prior to leasing, soil contamination was identified at the subject facility. The contaminated soil was removed with the exception of those underlying a building because of safety concern. The removed soil was remediated on-site and properly disposed of with the approval of the regulatory agencies.

There is a vapor extraction system installed immediately adjacent to the northeastern side of the building to mitigate the residual volatile hydrocarbons contained in the soil. The residual volatile organic chemicals (VOCs) were remediated from an average VOCs concentration of about 660 ppm to a satisfactory level at an average of 0.82 ppm in soil. A soil closure plan was submitted (11/15/91) and approval of closure was received on 1/21/92 after submittal of confirmation soil sampling results. The soil vapor extraction system was decommissioned and the Bay Area Air Quality Management District was notified on 12/16/91.

As part of the site activities, a quarterly groundwater monitoring program has been implemented. Previous quarterly monitoring events were conducted on November 6, 1989, February 20, 1990, May 31, 1990, September 7, 1990, December 4, 1990, April 16, 1991, July 3, 1991, October 12, 1991 and January 26, 1992 respectively. This quarterly monitoring event was conducted on April 8, 1991. Water samples were taken from the monitoring wells and sent to a State-certified laboratory for analysis under proper chain-of-custody procedures.

This report presents the results of this quarterly groundwater monitoring event on well EW-1 including laboratory analytical results, summary of findings, and conclusions and discussions. **No groundwater movement analysis was performed because of the reduced monitoring activity as agreed with the Alameda County Health Care Agency with Mr. Dick Herring of Croley & Herring Investment Company.**

(See B. Oliva letter 4/6/92 to R. D. Herring, Croley and Herring Inv. Co.)



SHELLMOUND AVENUE

F.P. LATHROP CO.  
UNDERGROUND GAS  
TANK

○ MW-2



PARKING LOT

5800 CHRISTIE AVENUE  
EMERYVILLE, CALIFORNIA

CHRISTIE AVENUE

MW-3 ○

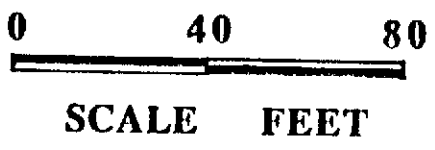
EW-1

THE GOOD GUYS STORE

POWELL STREET

LEGEND

○ MONITORING WELLS



*ETS*

ENVIRONMENT & TECHNOLOGY SERVICES

*FIGURE 1*

*LOCATION MAP*

## 2.0 GROUNDWATER MOVEMENT ANALYSIS

No groundwater movement analysis was performed because of the reduced monitoring activity as agreed with the Alameda County Health Care Agency with Mr. Dick Herring of Croley & Herring Investment Company. (See B. Oliver ltr 4/6/95)

### 3.0 GROUNDWATER QUALITY

On April 8, 1992, ETS field personnel visited the facility and collected water samples from monitoring well EW-1 for laboratory analysis. These groundwater samples were sent to a state-certified laboratory for analyses of halocarbons using EPA method 601, total petroleum hydrocarbons (TPH) as gasoline and gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA method 602.

From the results of the laboratory analysis (Appendix A), water sample taken from well EW-1 contained some volatile organic compounds. The VOCs detected in well EW-1 from the April 8, 1992 sampling episode are presented in Table 1.



#### 4.0 SUMMARY OF FINDINGS

No groundwater movement analysis was performed because of the reduced monitoring activity as agreed with the Alameda County Health Care Agency with Mr. Dick Herring of Croley & Herring Investment Company. (See B. Oliver ltr 4/6/92)

Table 1 presents a summary of analytical results of well EW-1 in time series. There are several factors that affect the changes in the hydrocarbon concentration. These factors are variations in water table, chemical breakdown due to natural degradation, and unidentified off-site sources.

At present, an experiment is being tried to desorb the organic chemicals from the clayey material and oxidize them in places near well EW-1 by the application of direct electrical current flow in the subsurface without pumping the groundwater. To date, the experiment showed successful control of the flow of groundwater in the area and the total volatile organic compounds (VOCs) at one time has reached below 4 ppm due to the induced electrochemical reactions between electrodes. The degree of the effectiveness and success cannot be assessed at this time because the readings were interfered by the spreading of the upgradient gasoline plume. Also, there were indications that there are strong biodegradation activities in the subsurface.

TABLE 1

SUMMARY OF QUARTERLY GROUNDWATER QUALITY RESULTS OF WELL EW-1  
5800 CHRISTIE AVENUE,  
EMERYVILLE, CALIFORNIA

CONCENTRATIONS IN MG/L

COMPOUNDS	5/8/89	11/6/89	2/20/90	5/31/90	9/7/90	12/4/90	4/6/91	7/3/91	10/12/91	1/8/92	4/8/92
TPH as GASOLINE	NA	0.74	12.0	24.0	25.0	7.4	51.0	23.0	39.0	<5.0	12.0
BENZENE	ND	0.18	1.3	0.056	1.1	0.18	3.0	0.65	ND	ND	4.0
TOLUENE	0.19	0.039	3.6	6.1	0.8	3.5	12.0	8.7	1.1	0.58	ND
XYLENES	0.17	0.067	0.047	0.14	0.042	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	0.0008	0.0071	0.017	ND	ND	ND	ND	ND	ND	ND
HALOCARBONS	0.718	1.1861	4.701	6.876	6.661	3.762	10.6	6.49	2.794	4.459	6.8
TCE	0.64	0.74	1.1	0.83	0.49	1.5	1.3	0.13	0.73	1.7	2.8
1,1 DCE	0.078	0.0023	0.014	0.069	0.036	ND	ND	ND	ND	ND	ND
1,2 DCE	ND	0.35	2.5	0.11	2.4	1.5	3.7	2.0	0.62	1.52	ND
1,1,1 TCA	ND	0.026	0.55	1.2	0.51	0.072	2.9	0.2	0.47	0.089	ND
1,1 DCA	ND	0.034	0.46	1.9	1.3	0.46	1.8	2.0	0.63	0.42	1.3
1,2 DCA	ND	0.0048	0.034	0.033	0.053	ND	ND	ND	0.12	0.25	2.7
VINYL CHLORIDE	ND	0.029	ND	2.6	1.7	0.23	0.9	1.99	0.17	0.48	ND
CHLOROETHANE	ND	ND	0.029	0.094	0.15	ND	ND	0.17	0.054	ND	ND
MET. CHLORIDE	ND	ND	0.014	0.04	0.022	ND	ND	ND	ND	ND	ND
TOTAL VOCs	1.078	1.9261	16.701	30.876	31.661	11.162	61.6	29.49	41.794	<9.459	18.8

NA NOT ANALYSED

ND NOT DETECTED OR BELOW DETECTION LIMITS

VOCs VOLATILE ORGANIC COMPOUNDS (TPH PLUS TOX)

*APPENDIX A*

*GROUNDWATER LABORATORY ANALYSIS REPORT*

EPA METHODS - 601/602

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=====
CLIENT:      CHIC                                DATE REC'D:  04/08/92
PROJECT:                                           DATE ANALYZED: 04/18/92
SAMPLE ID:   EW-1                                MATRIX TYPE:  Water
CONTROL NO:  N9204-04-1
=====
    
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<u>PARAMETERS (601)</u>	<u>RESULTS (ug/L)</u>	<u>DETECTION LIMIT (ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	1
Trans-1,2-Dichloroethene	ND	1
cis 1,2 Dichloroethene	ND	1
1,1-Dichloroethane	1300	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	2700	1
Trichloroethene	2800	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
Trans-1,3-Dichloropropene	ND	1
Cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
Dibromochloromethane	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
M-Dichlorobenzene	ND	1
P-Dichlorobenzene	ND	1
O-Dichlorobenzene	ND	1
<u>PARAMETERS (602)</u>		
Benzene	ND	1
Toluene	4000	1
Ethylbenzene	ND	1
Xylenes	ND	1

## EPA METHODS - 601/602

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=====
CLIENT:      CHIC                      DATE REC'D:   04/08/92
PROJECT:     DATE ANALYZED: 04/18/92
SAMPLE ID:   EW-2                      MATRIX TYPE:   Water
CONTROL NO:  N9204-04-2
=====

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<u>PARAMETERS (601)</u>	<u>RESULTS</u> <u>(ug/L)</u>	<u>DETECTION LIMIT</u> <u>(ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	2100	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	4100	1
Methylene Chloride	ND	1
Trans-1,2-Dichloroethene	ND	1
cis 1,2 Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	3300	1
Trichloroethene	6400	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
Trans-1,3-Dichloropropene	ND	1
Cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
Dibromochloromethane	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
M-Dichlorobenzene	ND	1
P-Dichlorobenzene	ND	1
O-Dichlorobenzene	ND	1
<u>PARAMETERS (602)</u>		
Benzene	ND	1
Toluene	5100	1
Ethylbenzene	ND	1
Xylenes	ND	1

EPA METHODS - 601/602

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=====
CLIENT:      CHIC                      DATE REC'D:   04/08/92
PROJECT:     DATE ANALYZED: 04/18/92
SAMPLE ID:   EW-3                      MATRIX TYPE:  Water
CONTROL NO:  N9204-04-3
=====
  
```

<u>PARAMETERS (601)</u>	<u>RESULTS</u> <u>(ug/L)</u>	<u>DETECTION LIMIT</u> <u>(ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	2900	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	2900	1
Methylene Chloride	ND	1
Trans-1,2-Dichloroethene	ND	1
cis 1,2 Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	990	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	6900	1
Trichloroethene	2600	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
Trans-1,3-Dichloropropene	ND	1
Cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
Dibromochloromethane	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
M-Dichlorobenzene	ND	1
P-Dichlorobenzene	ND	1
O-Dichlorobenzene	ND	1
<u>PARAMETERS (602)</u>		
Benzene	ND	1
Toluene	14000	1
Ethylbenzene	ND	1
Xylenes	ND	1

QUALITY CONTROL DATA

CLIENT: CHIC  
 PROJECT:  
 CONTROL NO: N9204-04

METHOD EPA M8015G  
 MATRIX: Water

SAMPLE ID: Blank

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (mg/L)	<u>AMOUNT SPIKED</u> (mg/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
Gasoline	ND	2	80	85	5

QUALITY CONTROL DATA

CLIENT: CHIC  
 PROJECT:  
 CONTROL NO: N9204-04

METHOD EPA 601/602  
 MATRIX: Water

SAMPLE ID: Blank

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
1,2 DCE	ND	10	81	80	1
TCE	ND	10	79	77	2
Benzene	ND	10	92	93	1
Toluene	ND	10	82	80	2



## EPA METHODS - 601/602

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CLIENT:      CHIC                                DATE REC'D:  04/08/92
PROJECT:                                           DATE ANALYZED: 04/18/92
SAMPLE ID:   Blank                               MATRIX TYPE:   Water
CONTROL NO:  N9204-04
=====

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<u>PARAMETERS (601)</u>	<u>RESULTS</u> <u>(ug/L)</u>	<u>DETECTION LIMIT</u> <u>(ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	2	1
Trans-1,2-Dichloroethene	ND	1
cis 1,2 Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
Trans-1,3-Dichloropropene	ND	1
Cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
Dibromochloromethane	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
M-Dichlorobenzene	ND	1
P-Dichlorobenzene	ND	1
O-Dichlorobenzene	ND	1
<u>PARAMETERS (602)</u>		
Benzene	ND	1
Toluene	ND	1
Ethylbenzene	ND	1
Xylenes	ND	1

N.

CLIENT NAME: CHIC  
 ADDRESS: 448 THARP DRIVE  
MORAGA, CA 94556  
 PHONE NO. \_\_\_\_\_ FAX NO. \_\_\_\_\_  
 PROJECT NAME: \_\_\_\_\_  
 SEND REPORT TO: WALTER LOO

CHAIN OF CUSTODY RECORD  
 REQUEST FOR ANALYSIS

DATE: 4/6/92  
 PAGE 1 OF 1



CKY Incorporated  
 Environmental Services  
 3942 Valley Avenue, Suite F  
 Pleasanton, CA 94566  
 Tel: 415-846-3188  
 Fax: 415-846-3188

N9204-04

GASOLINE TPH

SAMPLER NAME/SIGNATURE					TURN AROUND TIME		ANALYSES REQUIRED									
<u>WALTER LOO</u>					NORMAL	<input checked="" type="checkbox"/> 5 DAYS	418.1	M8015	8010/601	8020/602	8080/608	8240/824	8270/825	CAM Metals	K/H	NO3
					RUSH	<input type="checkbox"/>										
SAMPLE NUMBER	SAMPLING DATE/TIME	PRESERVATIVE	CONTAINER SIZE/TYPE	SAMPLE DESCRIPTION												
				WATER	SOIL	OTHER										
1	<u>EW-1</u>	<u>4/6/92</u>	<u>2:30P</u>	<u>2</u>	<u>40ML</u>	<input checked="" type="checkbox"/>										
				<u>1</u>	<u>500ML</u>	<input checked="" type="checkbox"/>									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<u># 2</u>	<u>4/6/92</u>	<u>2:30P</u>	<u>2</u>	<u>40ML</u>	<input checked="" type="checkbox"/>										
				<u>1</u>	<u>500ML</u>	<input checked="" type="checkbox"/>									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	<u># 3</u>	<u>4/6/92</u>	<u>2:30P</u>	<u>2</u>	<u>40ML</u>	<input checked="" type="checkbox"/>										
				<u>1</u>	<u>500ML</u>	<input checked="" type="checkbox"/>									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

COMMENTS: PLEASE KEEP ORGANIC & INORGANIC ANALYSIS REPORTS SEPARATELY.

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>4/6/92</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>4/6/92</u>	Relinquished by: (Signature)	Date:	Received by: (Signature)	Date:
Company: <u>ETS</u>	Time: <u>4:15P</u>	Company: <u>CKY</u>	Time: <u>1610</u>	Company:	Time:	Company:	Time:

Storage/Disposal of Samples: Sample will be stored at CKY for 30 days at no charge and at \$10/sample/month thereafter. Disposal of sample by the Laboratory will be charged at \$10/sample.