



IT CORPORATION

A Member of The IT Group

IT/EMCON


1326 N. Market Boulevard
Sacramento, California 95834-1943

OCT 09 2001

PHONE: 916/928-3300
FAX: 916/928-3341

TRANSMITTAL

To: Ms. Jeanne M. Zolezzi **DATE:** OCTOBER 2, 2001
 Herum, Crabtree, Dyer, Zolezzi & Terpstra, LLP **PROJECT No.:** 792775
 2291 West March Lane, Suite B100
 Stockton, California 95207

FROM: Charles S. Metzinger 

RE: Submittal of Third Quarter 2001 Monitoring Report, McLemore Trust/Hard Chrome Engineering

QUANTITY:	DESCRIPTION:
1	Third Quarter 2001 Monitoring Report, McLemore Trust/Hard Chrome Engineering

FOR YOUR:	SENT BY:
<input checked="" type="checkbox"/> USE	<input checked="" type="checkbox"/> REGULAR MAIL
<input type="checkbox"/> APPROVAL	<input type="checkbox"/> OVERNIGHT
<input type="checkbox"/> REVIEW/COMMENTS	<input type="checkbox"/> UPS
<input type="checkbox"/> INFORMATION	<input type="checkbox"/> COURIER
<input type="checkbox"/> OTHER	<input type="checkbox"/> OTHER

cc: Ms. Cheryl McLemore
 Mr. Tom Peacock, Alameda County Environmental Health
 Ms. Patricia Nettles, Department of Toxic Substances Control (California)
 Ms. Sumadhu Arigala, Regional Water Quality Control Board
 (San Francisco Bay Area)

IT/EMCON

**SEMI-ANNUAL
THIRD QUARTER 2001 MONITORING REPORT
HARD CHROME ENGINEERING
OAKLAND, CALIFORNIA**

Prepared for:
McLemore Trust
October 2, 2001

Prepared by:
IT/EMCON
1326 North Market Boulevard
Sacramento, California 95834-1912

Project No.: 792775

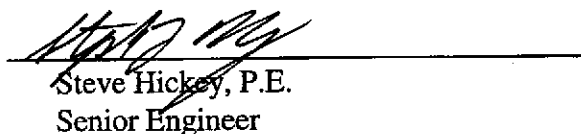
Semi-Annual
Third Quarter 2001 Monitoring Report
Hard Chrome Engineering
Oakland, California

The material and data in this report were prepared under the supervision and direction of the undersigned.

IT/EMCON



Charles S. Metzinger
Project Manager



Steve Hickey, P.E.
Senior Engineer

IT/EMCON

CONTENTS

LIST OF TABLES AND ILLUSTRATIONS	iv
INTRODUCTION	1
Background	1
SAMPLING AND ANALYSIS PROGRAM	2
RESULTS	3
Groundwater Flow and Gradient	3
Quality Control Results	3
Groundwater Analytical Results	4
SUMMARY AND CONCLUSIONS	5
LIMITATIONS	
APPENDIX A	FIELD REPORT AND FIELD DATA SHEETS
APPENDIX B	CERTIFIED ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY REPORTS

IT/EMCON

TABLES AND ILLUSTRATIONS

Tables

- 1 Groundwater Elevation Data
- 2 Groundwater Analytical Results

Figures

- 1 Site Location Map
- 2 Site Map
- 3 Monitoring Well Purging Protocol
- 4 Groundwater Contour Map, September 13, 2001

IT/EMCON

SAC:\SACRFP\COMMON\sacDP\2001\PR\PJ7\792775.1ab.doc-01\it:1
(00005000)

INTRODUCTION

The following report documents the semi-annual third quarter 2001 monitoring event conducted at the Hard Chrome Engineering facility, located 750 107th Avenue, Oakland, California (see Figure 1). The site currently operates as a chrome plating facility and occupies approximately 27,500 square feet. Groundwater monitoring consists of collecting groundwater samples for laboratory analyses from each monitoring well, measuring groundwater elevation in each monitoring well, and evaluating groundwater gradient and direction of groundwater flow beneath the site.

Background

Based on the Preliminary Environmental Characterization, BSK & Associates, September 29, 1992, and Summary and Evaluation of Environmental Conditions, Soil and Groundwater Investigation, March 24, 1998, EMCON, and Recommendations for Future Actions, Levine Fricke, July 2, 1996, it appears that groundwater and, to a lesser extent, soil beneath the site is impacted with chromium. As part of the previous investigations, soil borings SB-1 through SB-17 were drilled, and groundwater monitoring wells MW-1 and MW-1B through MW-6 were installed at the site. Site soil and groundwater impacted with chromium appears to be primarily located near a concrete-lined pit within the Hard Chrome facility (see Figure 2).

IT/EMCON

SAMPLING AND ANALYSIS PROGRAM

IT/EMCON measured groundwater levels in each well on site using an electronic sounding device and reported the data on the monitoring well data forms included in Appendix A. Groundwater monitoring wells MW-1 through MW-4 and MW-6 were sampled consistent with the protocol presented in Figure 3 and submitted for chemical analysis. Monitoring wells MW-1B and MW-5 were not accessible, and were not sampled this quarter. Groundwater samples collected on June 26 and 27, 1997, were not field filtered. Groundwater samples collected on September 13, 2001 were filtered in the field.

Groundwater samples collected from wells MW-1 through MW-4 and MW-6 were submitted to Sequoia Analytical (a state-certified laboratory) and analyzed for the CAM 17 listed dissolved metals using U. S. Environmental Protection Agency (USEPA) Series Methods 6000/7000 and for dissolved hexavalent chromium using USEPA Method 7196, and for dissolved mercury by USEPA Method 7470. See Appendix B for certified analytical results and chain-of-custody reports.

IT/EMCON

RESULTS

Groundwater Flow and Gradient

Groundwater during the third quarter 2001 monitoring event was measured, and groundwater elevations were calculated in each well and used to construct a groundwater contour map (see Figure 4). During the third quarter 2001 monitoring event, groundwater flowed to the west with a gradient of approximately 0.003 foot per foot. These flow conditions are generally similar to those reported by the previous consultant and generally agree with assumed regional flow patterns.

Quality Control Results

Laboratory Quality Control (QC) data were evaluated to assess the acceptability of the analytical data, and therefore, their usefulness in interpreting groundwater quality. Laboratory QC results are included with the analytical reports in Appendix B. The QC evaluation is summarized below.

- All analyses were performed within USEPA-recommended holding times
- The results of the daily laboratory method blanks were acceptable
- Matrix spike and matrix spike duplicates (MS/MSD) were performed by the laboratory. MS and MSD recoveries, and the relative percent difference (RPD) between duplicate results were within acceptance limits.
- The laboratory reported the results of laboratory control samples (LCS). Results were within acceptance limits.
- Routine reporting limits were used to quantify and report the analytical results.

The laboratory QC results indicate that the groundwater analytical data are of acceptable quality and can be used to evaluate groundwater quality.

IT/EMCON

Groundwater Analytical Results

A concentration of barium was detected in MW-4 at 0.1 milligrams per liter (mg/L). Chromium was detected in all the wells, with the exception of MW-1, ranging from 0.031 mg/L to 1,000 mg/L. Hexavalent chromium was detected in MW-1 through MW-4 ranging from 0.0052 mg/L to 55 mg/L. Copper, mercury, and zinc were detected in MW-2 at concentrations of 14 mg/L, 0.00088 mg/L, and 2.3 mg/L, respectively. Nickel was detected in well MW-4 at a concentration of 0.052 mg/L. Table 2 summarizes the groundwater analytical results.

IT/EMCON

SUMMARY AND CONCLUSIONS

Based on analytical results collected from wells MW-1 through MW-4 and MW-6 on September 13, 2001 groundwater beneath the site is impacted with total and hexavalent chromium. Additional metals detected include barium, copper, mercury, nickel and zinc. Impacted water extends from the existing sump (well MW-2), west (hydraulically downgradient) toward the locations of wells MW-5 and MW-1B. The lateral extent of impacted groundwater beneath the site appears to be defined to the north by monitoring well MW-4; and to the south and southwest by wells MW-1, MW-3, and MW-6. The lateral extent of impacted groundwater has not been defined to the east or northwest of the site; however, concentrations of total chromium and hexavalent chromium have generally decreased in well MW-2 and wells MW-5 and MW-1B. Vertically, the extent of impacted groundwater has not been defined.

During the September 2001 monitoring event, the monitoring well exhibiting the greatest chromium impact was well MW-2, located hydraulically downgradient from the sump. Monitoring wells MW-3, MW-4, and MW-6 also showed some chromium impact.

Although, concentrations of total chromium in on-site wells MW-2, MW-3, and MW-4 currently exceed the maximum contaminant level (MCL) for this compound (.05 mg/L), they have only slightly increased this quarter from last quarter levels. Overall, these wells have decreased with respect to historical levels. Historical analytical results are contained in Table 2.

IT/EMCON

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

IT/EMCON

Table 1

**Groundwater Elevation Data
Hard Chrome Engineering
September 13, 2001**

Sample Designation	Top of Casing (feet/SSR)	Depth to Water (feet)	Groundwater Elevation (feet/SSR)
MW-1	100.23	17.49	82.74
MW-1B	99.01	NM	NM
MW-2	100.38	17.83	82.55
MW-3	100.37	17.70	82.67
MW-4	100.30	17.62	82.68
MW-5	99.29	NM	NM
MW-6	100.48	17.93	82.55

feet/SSR = feet with respect to the site specific benchmark
NM = Not Measured. Near or under parked camper.

Groundwater Analytical Results
Hard Chrome Engineering
(Units: mg/L, unless noted)

Sample Designation	Sampling Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	pH (units)
MW-1	06/26/97	NA	<0.05	NA	<0.005	NA	0.33	<0.01	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.57
MW-1	08/11/97	NA	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.46
MW-1	09/29/97	NA	<0.05	NA	<0.005	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.53
MW-1	12/30/97	NA	<0.01	NA	<0.005	NA	0.01	<0.01	NA	NA	NA	NA	NA	NA	<0.01	NA	NA	NA	NA	7.18
MW-1	04/23/98	NA	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-1	03/13/00	<0.1	<0.1	<0.1	<0.01	<0.01	0.0305	0.0261	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	0.0107	6.51
MW-1	09/20/00	<0.05	<0.05	0.105	<0.005	<0.005	<0.005	<0.005	<0.02	<0.005	<0.05	<0.0002	<0.02	<0.02	<0.05	<0.005	<0.05	<0.02	<0.0005	6.31
MW-1	03/20/01	<0.1	<0.1	<0.1	<0.01	<0.01	0.0951	0.0486	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	0.0236	6.88
MW-1	09/13/01	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.0052	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	5.54
MW-1B	06/27/97	NA	<0.05	NA	0.011	NA	430	360	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.57
MW-1B	08/11/97	NA	NA	NA	NA	NA	340	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.48
MW-1B	09/29/97	NA	<0.5	NA	<0.05	NA	280	260	NA	NA	NA	NA	NA	NA	<0.5	NA	NA	NA	NA	7.59
MW-1B	12/30/97	NA	<0.05	NA	<0.025	NA	200	160	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.91
MW-1B	04/23/98	NA	NA	NA	NA	NA	580	520	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.47
MW-1B	03/13/00	<0.1	<0.1	<0.1	<0.01	<0.01	252	258	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.56
MW-1B	09/20/00	0.56	<0.5	<0.5	<0.05	<0.05	134	122	<0.2	<0.05	<0.5	<0.0002	<0.2	<0.2	<0.5	<0.05	<0.5	<0.2	<0.005	6.01
MW-1B	03/20/01	<0.5	<0.5	<0.5	<0.05	<0.05	72.6	74.6	<0.2	<0.05	<0.5	<0.0002	<0.2	<0.2	<0.5	<0.05	<0.5	<0.2	<0.05	6.95
MW-1B	09/13/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	06/27/97	NA	0.21	NA	0.032	NA	3000	3000	NA	NA	NA	NA	NA	NA	0.14	NA	NA	NA	NA	4.65
MW-2	08/11/97 *	NA	NA	NA	NA	NA	2600	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.66
MW-2	09/29/97	NA	<0.5	NA	<0.05	NA	1500	1400	NA	NA	NA	NA	NA	NA	<0.5	NA	NA	NA	NA	4.82
MW-2	12/30/97	NA	<0.05	NA	<0.025	NA	86	83	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.42
MW-2	04/23/98	NA	NA	NA	NA	NA	150	140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.31
MW-2	03/13/00	<0.1	<0.1	<0.1	<0.01	<0.01	139	136	<0.04	1.24	<0.1	<0.0002	<0.04	0.3	<0.1	<0.01	<0.1	<0.04	0.294	4.77
MW-2	09/20/00	2.67	<2.5	<2.5	<0.25	<0.25	598	611	<1.0	7.06	<2.5	0.00078	<1.0	1.04	<2.5	<0.25	<2.5	<1.0	1.12	3.49
MW-2	03/20/01	2.24	<2	<2	<0.2	<0.2	752	757	<0.8	17.2	<2	0.00122	<0.8	1.69	<2	<0.2	<2	<0.8	1.88	6.37
MW-2	09/13/01	<10	<10	<10	<1	<1	1000	55	<4	14	<10	0.00088	<4	<4	<10	<1	<10	<4	2.3	5.19
MW-3	06/26/97	NA	<0.05	NA	0.011	NA	1	<0.01	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.86
MW-3	08/11/97	NA	NA	NA	NA	NA	<0.01	<0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.84
MW-3	09/29/97	NA	<0.05	NA	<0.005	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	0.05	NA	NA	NA	NA	7.55
MW-3	12/30/97	NA	<0.01	NA	<0.005	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	<0.01	NA	NA	NA	NA	7.42
MW-3	04/23/98	NA	NA	NA	NA	NA	0.01	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.94
MW-3	03/13/00	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.00623	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.68
MW-3	09/20/00	<0.05	<0.05	0.0553	<0.005	<0.005	0.014	<0.005	<0.02	<0.005	<0.05	<0.0002	<0.02	<0.02	<0.05	0.0056	<0.05	<0.02	<0.0005	6.56
MW-3	03/20/01	<0.1	<0.1	<0.1	<0.01	<0.01	0.0368	0.017	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	0.0135	7.00
MW-3	09/13/01	<0.1	<0.1	<0.1	<0.01	<0.01	0.11	0.074	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.28

Groundwater Analytical Results
Hard Chrome Engineering
(Units: mg/L, unless noted)

Sample Designation	Sampling Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	pH (units)
MW-4	06/26/97	NA	<0.05	NA	0.006	NA	0.55	<0.01	NA	NA	NA	NA	NA	NA	0.06	NA	NA	NA	NA	6.88
MW-4	08/11/97	NA	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.72
MW-4	09/29/97	NA	<0.05	NA	<0.005	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	0.07	NA	NA	NA	NA	7.61
MW-4	12/30/97	NA	<0.01	NA	<0.005	NA	0.01	<0.01	NA	NA	NA	NA	NA	NA	<0.01	NA	NA	NA	NA	7.40
MW-4	04/23/98	NA	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	03/13/00	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.00623	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.60
MW-4	09/20/00	<0.05	<0.05	0.0624	<0.005	<0.005	<0.005	<0.005	<0.02	<0.005	<0.05	<0.0002	<0.02	<0.02	<0.05	<0.005	<0.05	<0.02	<0.0005	6.62
MW-4	03/20/01	<0.1	<0.1	0.118	<0.01	<0.01	1.03	0.475	<0.04	<0.01	<0.1	<0.0002	<0.04	0.059	<0.1	<0.01	<0.1	<0.04	<0.01	6.64
MW-4	09/13/01	<0.1	<0.1	0.1	<0.01	<0.01	1.3	0.011	<0.04	<0.01	<0.1	<0.0002	<0.04	0.052	<0.1	<0.01	<0.1	<0.04	<0.01	5.94
MW-5	06/27/97	NA	<0.05	NA	0.005	NA	110	90	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.70
MW-5	08/11/97	NA	NA	NA	NA	NA	120	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.67
MW-5	09/29/97	NA	<0.5	NA	<0.05	NA	130	100	NA	NA	NA	NA	NA	NA	<0.5	NA	NA	NA	NA	7.13
MW-5	12/30/97	NA	<0.05	NA	<0.025	NA	110	98	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	7.13
MW-5	04/23/98	NA	NA	NA	NA	NA	70	58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.67
MW-5	03/13/00	<0.1	<0.1	<0.1	<0.01	<0.01	49.4	54.3	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.63
MW-5	09/20/00	<0.5	<0.5	<0.5	<0.05	<0.05	81.6	81.4	<0.2	<0.05	<0.5	<0.0002	<0.2	<0.2	<0.5	<0.05	<0.5	<0.2	<0.005	6.56
MW-5	03/20/01	<0.1	<0.1	<0.1	<0.01	<0.01	0.448	<0.005	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.94
MW-5	09/13/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-6	06/26/97	NA	<0.05	NA	0.005	NA	0.47	<0.01	NA	NA	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	6.91
MW-6	08/11/97	NA	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.84
MW-6	09/29/97	NA	<0.05	NA	<0.005	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	0.05	NA	NA	NA	NA	7.79
MW-6	12/30/97	NA	<0.01	NA	<0.005	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	<0.01	NA	NA	NA	NA	7.40
MW-6	04/23/98	NA	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-6	03/13/00	<0.1	<0.1	0.102	<0.01	<0.01	<0.01	0.00733	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.71
MW-6	09/20/00	<0.05	<0.05	0.0667	<0.005	<0.005	0.00665	<0.005	<0.02	<0.005	<0.05	<0.0002	<0.02	<0.02	<0.05	<0.005	<0.05	<0.02	0.0133	6.65
MW-6	03/20/01	<0.1	<0.1	<0.1	<0.01	<0.01	0.028	0.0249	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.83
MW-6	09/13/01	<0.1	<0.1	<0.1	<0.01	<0.01	0.031	<0.005	<0.04	<0.01	<0.1	<0.0002	<0.04	<0.04	<0.1	<0.01	<0.1	<0.04	<0.01	6.36
MCL		0.006	0.05	1	0.004	0.005	0.05	---	---	1.0 **	---	0.002	---	0.1	0.05	0.1 **	0.002	---	5.0 **	---

Note: Samples collected on 06/26/97 and 06/27/97 were unfiltered and analyzed for total metals; all other samples were field filtered and analyzed for dissolved metals.

mg/L = Milligrams per liter

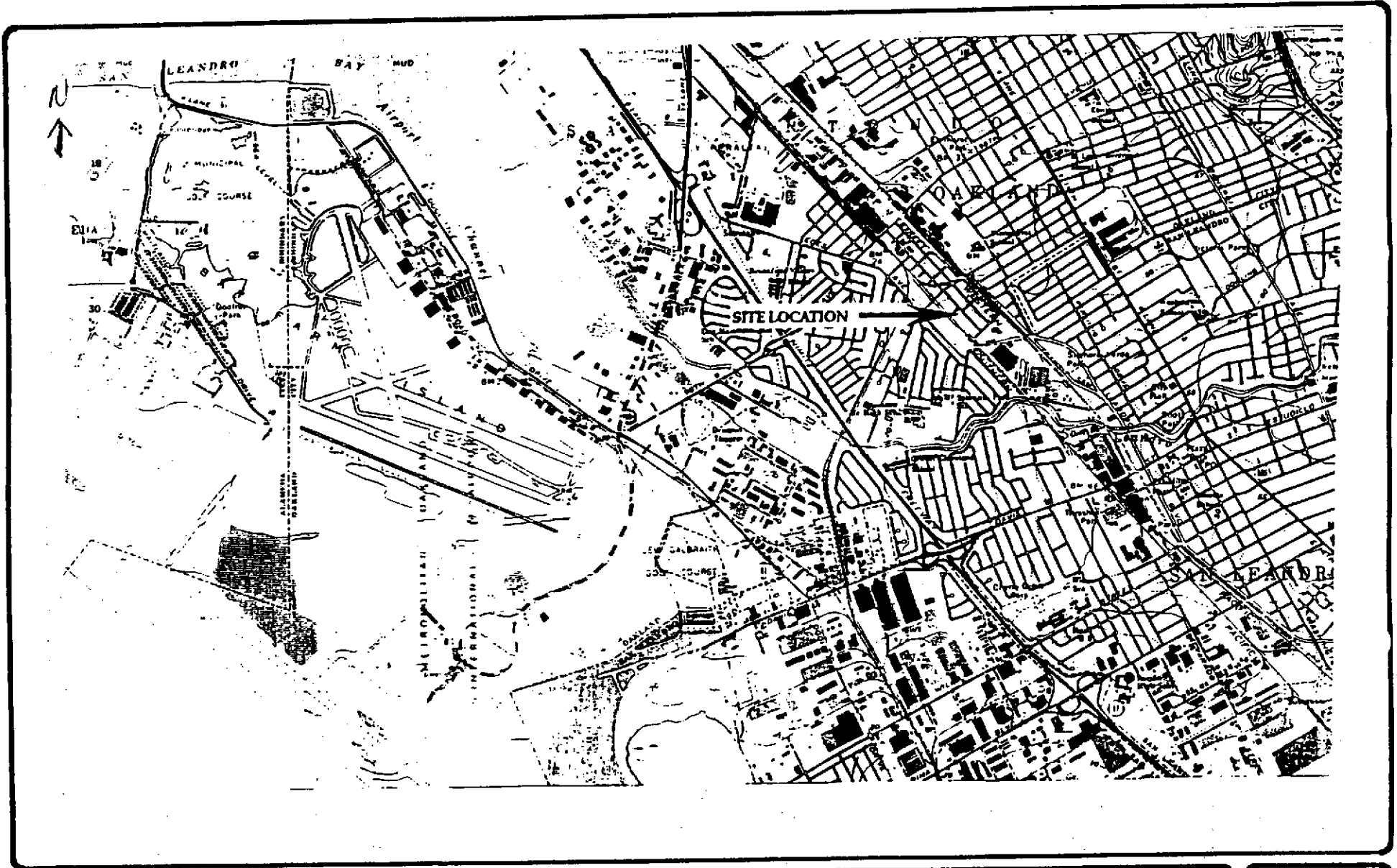
NA = Not Analyzed.

* Total dissolved solids and total suspended solids were analyzed and detected at concentrations of 5,200 and 13,000 mg/L.

MCL = California primary maximum contaminant level (MCL).

** = Secondary MCL

--- = MCL not established.



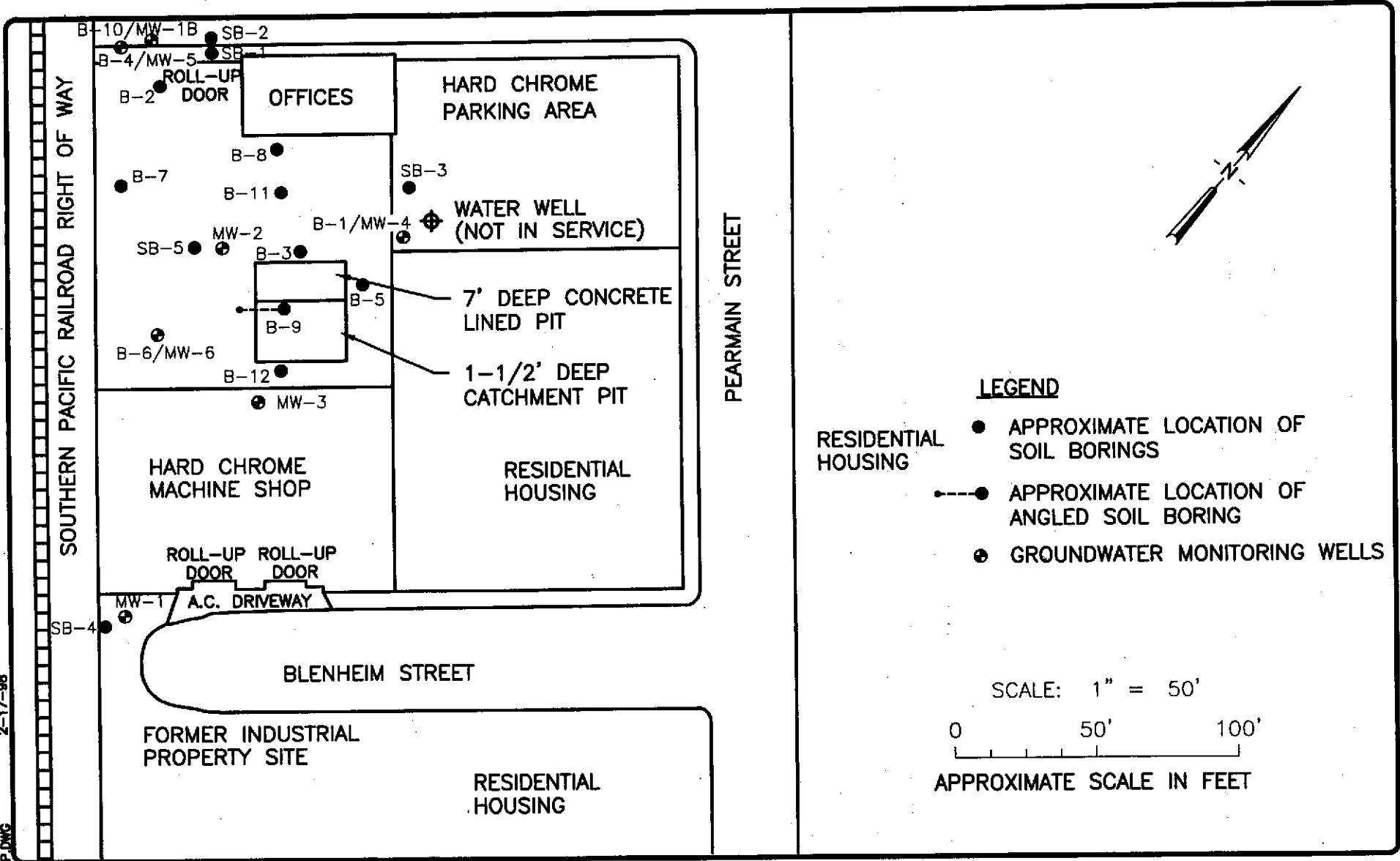
McLEMORE TRUST
HARD CHROME ENG. INC.,
750 1107th AVENUE, OAKLAND, CALIFORNIA

SITE LOCATION MAP

FIGURE
1
PROJECT NO.
22619-100.001

2-17-98

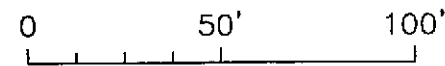
F:\DWG\2619\SITE\MAP.DWG



LEGEND

- APPROXIMATE LOCATION OF SOIL BORINGS
- APPROXIMATE LOCATION OF ANGLED SOIL BORING
- ⊕ GROUNDWATER MONITORING WELLS

SCALE: 1" = 50'



APPROXIMATE SCALE IN FEET



MCLEMORE TRUST
 HARD CHROME ENG. INC.,
 750 107TH AVENUE
 OAKLAND, CALIFORNIA
 SITE MAP

FIGURE
 2
 PROJECT NO.
 792775



MONITORING WELL PURGING PROTOCOL

MEASURE AND RECORD DEPTH TO WATER AND WELL TOTAL DEPTH

CHECK FOR FLOATING PRODUCT

YES

MEASURE AND DOCUMENT FLOATING PRODUCT THICKNESS. DO NOT SAMPLE WELL FOR DISSOLVED CONSTITUENTS.

NO

CALCULATE PURGE VOLUME BY USING THE FOLLOWING EQUATION:
$$P = \pi r^2 h \times 7.48 \times 3$$
where:
P = calculated purge volume (gallons)
 π = 3.14
r = radius of well casing in feet
h = height of water column in feet

EVACUATE WATER FROM WELL EQUAL TO THE CALCULATED PURGE VOLUME WHILE MONITORING GROUND-WATER STABILIZATION INDICATOR PARAMETERS (pH, CONDUCTIVITY, TEMPERATURE) AND TURBIDITY AT INTERVALS OF ONE CASING VOLUME.

WELL EVACUATED TO PRACTICAL LIMITS OF DRYNESS BEFORE REMOVING CALCULATED PURGE VOLUME

NO

FINAL TWO SETS OF GROUND-WATER STABILIZATION INDICATOR PARAMETER MEASUREMENTS MEET THE FOLLOWING CRITERIA:
pH = \pm 0.05 pH units
COND. = \pm 3 %
TEMP. = \pm 1.0 °F
TURBIDITY = \pm <5 NTU

YES

WELL PURGING CRITERIA MET; PROCEED TO WELL SAMPLING

NO

CONTINUE PURGING; EVACUATE ADDITIONAL CASING VOLUME OF WATER, MONITORING INDICATOR PARAMETERS FOR STABILITY.

YES

WELL RECHARGES TO A LEVEL SUFFICIENT FOR SAMPLE COLLECTION WITHIN 24 HOURS OF EVACUATION TO DRYNESS.

YES

FIELD TEST FIRST RECHARGE WATER FOR INDICATOR PARAMETERS AND TURBIDITY, THEN PROCEED TO WELL SAMPLING.

NO

RECORD WELL AS DRY FOR PURPOSES OF SAMPLING.

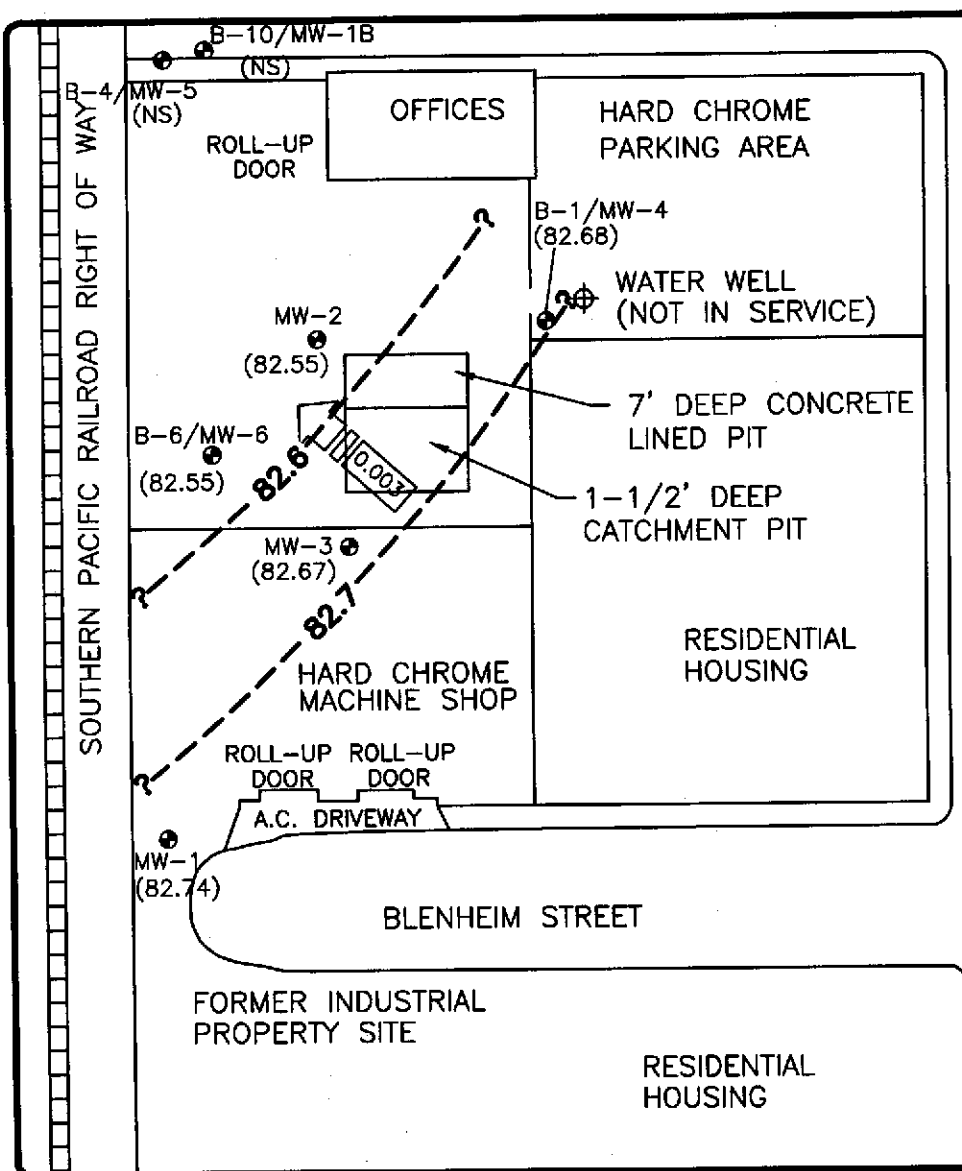


EMCON

MONITORING WELL PURGING PROTOCOL

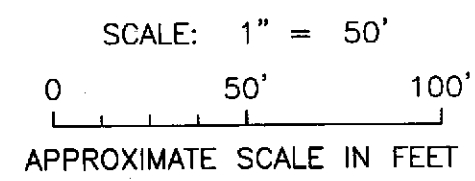
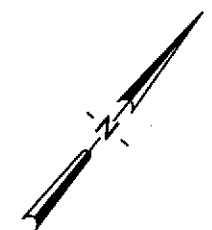
FIGURE

3



LEGEND

- GROUNDWATER MONITORING WELLS
- (82.74) GROUNDWATER ELEVATION (FEET) SEPTEMBER 13, 2001
- GROUNDWATER CONTOURS SEPTEMBER 13, 2001
- 0.003 → GROUNDWATER FLOW DIRECTION
- (NS) NOT SAMPLED



MCLEMORE TRUST
 HARD CHROME ENG. INC.,
 750 107TH AVENUE
 OAKLAND, CALIFORNIA
 GROUNDWATER CONTOUR MAP
 SEPTEMBER 13, 2001

FIGURE
 4
 PROJECT NO.
 792775

APPENDIX A

FIELD REPORT AND FIELD DATA SHEETS

**FIELD REPORT
WATER LEVEL / FLOATING PRODUCT
SURVEY**

IT CORPORATION
1326 North Market Boulevard
Sacramento, California 95834
(916) 928-3300

PROJECT NO : 792775 / 00002000

LOCATION : 750 107th Avenue, Oakland

DATE: 9/13/01

CLIENT : Hard Chrome Engineering

SAMPLER : R. Moyon

DAY OF WEEK: Thurs.

WELL ID	CASING ELEVATION (Feet, MSL)	TOTAL DEPTH (Feet)	DEPTH TO WATER (Feet)	DEPTH TO FLOATING PRODUCT (Feet)	FLOATING PRODUCT THICKNESS (Feet)	COMMENTS
MW-1		24.4	17.49			
MW-2		23.9	17.83			
MW-3		23.5	17.70			
MW-4		22.9	17.62			
MW-5		23.2	N/A			Under Near parked camper - unsafe, neighbourhood *
MW-6		22.7	17.93			
MW-1B		30.1	N/A			Same as MW-5

Comments :

* may have to call local police to move / have towed.

R. Moyon
Signature

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO: 792775 / 00002000
PURGED BY: Bob Morgan
SAMPLED BY: Bob Morgan

SAMPLE ID: MW-1B
CLIENT NAME: Hard Chrome Engineering
LOCATION: 750 107th Avenue, Oakland

TYPE: Groundwater Surface Water _____ Leachate _____ Other _____
CASING DIAMETER (inches): 2 _____ 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): _____ VOLUME IN CASING (gal.): _____
DEPTH OF WELL (feet): _____ CALCULATED PURGE (gal.): _____
DEPTH TO WATER (feet): _____ ACTUAL PURGE VOL. (gal.): _____

DATE PURGED: 9/13/01 END PURGE: _____
DATE SAMPLED: _____ SAMPLING TIME: _____

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<i>No sample.</i>						
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

OTHER: _____ ODOR: _____
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): _____

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
_____ 2" Bladder Pump	_____ Bailer (Teflon)	_____ 2" Bladder Pump	_____ Bailer (Teflon)
_____ Centrifugal Pump	_____ Bailer (PVC)	_____ Bomb Sampler	_____ Bailer (Stainless Steel)
_____ Submersible Pump	_____ Bailer (Stainless Steel)	_____ Dipper	_____ Submersible Pump
_____ Disposal Bailer	_____ Dedicated	_____ Disposal Bailer	_____ Dedicated
Other: _____		Other: _____	

WELL INTEGRITY: _____ LOCK: _____

REMARKS: Well not safely accessible.
City will need to have motor frame
towed. Bad area.

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____
E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____
Temperature °F _____

SIGNATURE: Bob Morgan REVIEWED BY: [Signature] PAGE 1 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO: 792775 / 00002000
 PURGED BY: Bob Morgan
 SAMPLED BY: Bob Morgan

SAMPLE ID: MW-6
 CLIENT NAME: Hard Chrome Engineering
 LOCATION: 750 107th Avenue, Oakland

TYPE: Groundwater Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): _____ VOLUME IN CASING (gal.): 0.77
 DEPTH OF WELL (feet): 22.70 CALCULATED PURGE (gal.): 2.33
 DEPTH TO WATER (feet): 17.93 ACTUAL PURGE VOL. (gal.): 2.50

DATE PURGED: 9/13/01 END PURGE: 1045
 DATE SAMPLED: ↓ SAMPLING TIME: 1055

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (μmhos/cm@25°C)	TEMPERATURE (°C)	COLOR (visual)	TURBIDITY (visual)
<u>1038</u>	<u>0.75</u>	<u>6.45</u>	<u>365.4</u>	<u>19.3</u>	<u>1+ green</u>	<u>low</u>
<u>1041</u>	<u>1.75</u>	<u>6.38</u>	<u>365.1</u>	<u>19.4</u>	<u>↓</u>	<u>↓</u>
<u>1045</u>	<u>2.50</u>	<u>6.36</u>	<u>367.0</u>	<u>19.3</u>	<u>↓</u>	<u>↓</u>

OTHER: _____ ODOR: _____
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): _____

PURGING EQUIPMENT

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Centrifugal Pump Bailer (PVC)
 Submersible Pump Bailer (Stainless Steel)
 Disposal Bailer Dedicated
 Other: _____

2" Bladder Pump Bailer (Teflon)
 Bomb Sampler Bailer (Stainless Steel)
 Dipper Submersible Pump
 Disposal Bailer Dedicated
 Other: _____

WELL INTEGRITY: _____ LOCK: OK

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____
 E.C. 1000 / _____ pH 7 / _____ pH 10 / _____ pH 4 / _____

Temperature °F _____
 SIGNATURE: Bob Morgan See MW-1 REVIEWED BY: [Signature] PAGE 2 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO : 792775 / 00002000
 PURGED BY : Bob Morgan
 SAMPLED BY : Bob Morgan

SAMPLE ID : MW-1
 CLIENT NAME : Hard Chrome Engineering
 LOCATION : 750 107th Avenue, Oakland

TYPE: Groundwater Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL) : _____ VOLUME IN CASING (gal.) : 1.12
 DEPTH OF WELL (feet) : 24.40 CALCULATED PURGE (gal.) : 3.37
 DEPTH TO WATER (feet) : 17.49 ACTUAL PURGE VOL. (gal.) : 3.50

DATE PURGED : 9/13/01 END PURGE : 0919
 DATE SAMPLED : _____ SAMPLING TIME : 0930

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°C)	COLOR (visual)	TURBIDITY (visual)
<u>0910</u>	<u>1</u>	<u>6.39</u>	<u>387.2</u>	<u>18.1</u>	<u>clear</u>	<u>low</u>
<u>0914</u>	<u>2.25</u>	<u>5.52</u>	<u>383.4</u>	<u>18.1</u>	<u>↓</u>	<u>↓</u>
<u>0919</u>	<u>3.50</u>	<u>5.54</u>	<u>383.5</u>	<u>18.1</u>	<u>↓</u>	<u>↓</u>

OTHER: _____ ODOR: _____
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): _____

PURGING EQUIPMENT

SAMPLING EQUIPMENT

_____ 2" Bladder Pump _____ Bailer (Teflon)
 _____ Centrifugal Pump _____ Bailer (PVC)
 _____ Submersible Pump _____ Bailer (Stainless Steel)
 Disposal Bailer _____ Dedicated
 Other: _____

_____ 2" Bladder Pump _____ Bailer (Teflon)
 _____ Bomb Sampler _____ Bailer (Stainless Steel)
 _____ Dipper _____ Submersible Pump
 Disposal Bailer _____ Dedicated
 Other: _____

WELL INTEGRITY: _____ LOCK: OK

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: 9/13/01 Time: 0850 Meter Serial No.: 601125
 E.C. 1425, 1413 pH 7 7.40, 7 pH 10 10.45, 10 pH 4 3.35, 4

Temperature °F 21.5
 SIGNATURE: Bob Morgan REVIEWED BY: [Signature] PAGE 3 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO: 792775 / 00002000
 PURGED BY: Bob Morgan
 SAMPLED BY: Bob Morgan

SAMPLE ID: MW-2
 CLIENT NAME: Hard Chrome Engineering
 LOCATION: 750 107th Avenue, Oakland

TYPE: Groundwater Surface Water Leachate Other
 CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): _____ VOLUME IN CASING (gal.): 0.99
 DEPTH OF WELL (feet): 23.90 CALCULATED PURGE (gal.): 2.96
 DEPTH TO WATER (feet): 17.83 ACTUAL PURGE VOL. (gal.): 3

DATE PURGED: 9/13/01 END PURGE: 1114
 DATE SAMPLED: _____ SAMPLING TIME: 1120

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°C)	COLOR (visual)	TURBIDITY (visual)
<u>1106</u>	<u>1</u>	<u>5.55</u>	<u>1759</u>	<u>19.1</u>	<u>Yellow</u>	<u>low</u>
<u>1110</u>	<u>2</u>	<u>4.97</u>	<u>2204</u>	<u>19.2</u>	<u>↓</u>	<u>↓</u>
<u>1114</u>	<u>3</u>	<u>5.19</u>	<u>1831</u>	<u>19.1</u>	<u>↓</u>	<u>↓</u>

OTHER: _____ ODOR: _____
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): _____

PURGING EQUIPMENT

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Centrifugal Pump Bailer (PVC)
 Submersible Pump Bailer (Stainless Steel)
 Disposal Bailer Dedicated
 Other: _____

2" Bladder Pump Bailer (Teflon)
 Bomb Sampler Bailer (Stainless Steel)
 Dipper Submersible Pump
 Disposal Bailer Dedicated
 Other: _____

WELL INTEGRITY: _____ LOCK: OK

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____
 E.C. 1000 / _____ pH 7 / _____ pH 10 / _____ pH 4 / _____

Temperature °F _____
 SIGNATURE: Bob Morgan See MW-1 REVIEWED BY: [Signature] PAGE 4 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO : 792775 / 00002000
 PURGED BY : Bob Morgan
 SAMPLED BY : Bob Morgan

SAMPLE ID : MW-3
 CLIENT NAME : Hard Chrome Engineering
 LOCATION : 750 107th Avenue, Oakland

TYPE: Groundwater Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL) : _____ VOLUME IN CASING (gal.) : 0.94
 DEPTH OF WELL (feet) : 23.50 CALCULATED PURGE (gal.) : 2.83
 DEPTH TO WATER (feet) : 17.70 ACTUAL PURGE VOL. (gal.) : 3

DATE PURGED : 9/13/01 END PURGE : 1010
 DATE SAMPLED : _____ SAMPLING TIME : 1020

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE °C	COLOR (visual)	TURBIDITY (visual)
<u>1004</u>	<u>1</u>	<u>6.31</u>	<u>400.5</u>	<u>19.2</u>	<u>lt green</u>	<u>low</u>
<u>1007</u>	<u>2</u>	<u>6.29</u>	<u>402.2</u>	<u>19.5</u>	<u>↓</u>	<u>↓</u>
<u>1010</u>	<u>3</u>	<u>6.28</u>	<u>404.4</u>	<u>19.5</u>	<u>↓</u>	<u>↓</u>

OTHER: _____ ODOR: _____
 (COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): _____

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
<input type="checkbox"/> 2" Bladder Pump	<input type="checkbox"/> Bailer (Teflon)	<input type="checkbox"/> 2" Bladder Pump	<input type="checkbox"/> Bailer (Teflon)
<input type="checkbox"/> Centrifugal Pump	<input type="checkbox"/> Bailer (PVC)	<input type="checkbox"/> Bomb Sampler	<input type="checkbox"/> Bailer (Stainless Steel)
<input type="checkbox"/> Submersible Pump	<input type="checkbox"/> Bailer (Stainless Steel)	<input type="checkbox"/> Dipper	<input type="checkbox"/> Submersible Pump
<input checked="" type="checkbox"/> Disposal Bailer	<input type="checkbox"/> Dedicated	<input checked="" type="checkbox"/> Disposal Bailer	<input type="checkbox"/> Dedicated
Other: _____		Other: _____	

WELL INTEGRITY: OK LOCK: OK

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____
 E.C. 1000 / pH 7 / pH 10 / pH 4 /

Temperature °F _____
 SIGNATURE: Bob Morgan See MW-1 REVIEWED BY: [Signature] PAGE 5 OF 7

Bob Morgan

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO : 792775 / 00002000
 PURGED BY : Bob Morgan
 SAMPLED BY : Bob Morgan

SAMPLE ID : MW-4
 CLIENT NAME : Hard Chrome Engineering
 LOCATION : 750 107th Avenue, Oakland

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 ✓ 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL) : _____ VOLUME IN CASING (gal.) : 0.86
 DEPTH OF WELL (feet) : 22.90 CALCULATED PURGE (gal.) : 2.58
 DEPTH TO WATER (feet) : 17.62 ACTUAL PURGE VOL. (gal.) : 2.75

DATE PURGED : 9/13/01 END PURGE : 1144
 DATE SAMPLED : ↓ SAMPLING TIME : 1155

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1137</u>	<u>1</u>	<u>5.70</u>	<u>504.2</u>	<u>19.7</u>	<u>lt green</u>	<u>low</u>
<u>1141</u>	<u>2</u>	<u>5.80</u>	<u>506.3</u>	<u>19.6</u>	<u>↓</u>	<u>↓</u>
<u>1144</u>	<u>2.75</u>	<u>5.84</u>	<u>505.7</u>	<u>19.3</u>	<u>↓</u>	<u>↓</u>

OTHER: _____ ODOR: _____
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): _____

PURGING EQUIPMENT

SAMPLING EQUIPMENT

_____ 2" Bladder Pump _____ Bailer (Teflon)
 _____ Centrifugal Pump _____ Bailer (PVC)
 _____ Submersible Pump _____ Bailer (Stainless Steel)
 Disposal Bailer _____ Dedicated

_____ 2" Bladder Pump _____ Bailer (Teflon)
 _____ Bomb Sampler _____ Bailer (Stainless Steel)
 _____ Dipper _____ Submersible Pump
 Disposal Bailer _____ Dedicated

Other: _____

Other: _____

WELL INTEGRITY: _____ OK LOCK: OK

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: Bob Morgan See MW-1 REVIEWED BY: [Signature] PAGE 6 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO: 792775 / 00002000
PURGED BY: Bob Morgan
SAMPLED BY: Bob Morgan

SAMPLE ID: MW-5
CLIENT NAME: Hard Chrome Engineering
LOCATION: 750 107th Avenue, Oakland

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
CASING DIAMETER (inches): 2 _____ 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): _____ VOLUME IN CASING (gal.): _____
DEPTH OF WELL (feet): _____ CALCULATED PURGE (gal.): _____
DEPTH TO WATER (feet): _____ ACTUAL PURGE VOL. (gal.): _____

DATE PURGED: 9/13/01 END PURGE: _____
DATE SAMPLED: _____ SAMPLING TIME: _____

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

OTHER: _____ ODOR: _____
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): _____

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
_____ 2" Bladder Pump	_____ Bailer (Teflon)	_____ 2" Bladder Pump	_____ Bailer (Teflon)
_____ Centrifugal Pump	_____ Bailer (PVC)	_____ Bomb Sampler	_____ Bailer (Stainless Steel)
_____ Submersible Pump	_____ Bailer (Stainless Steel)	_____ Dipper	_____ Submersible Pump
_____ Disposal Bailer	_____ Dedicated	_____ Disposal Bailer	_____ Dedicated
Other: _____		Other: _____	

WELL INTEGRITY: _____ LOCK: _____

REMARKS: * See MW-1 notes.

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____
E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: Bob Morgan REVIEWED BY: [Signature] PAGE 7 OF 7

IT CORPORATION - Drum Inventory Record

792775 / 00002000

750 107th Ave., Oakland

9/13/01

Project No

Location

Date

Hard Chrome Engineering

RCM

Thurs.

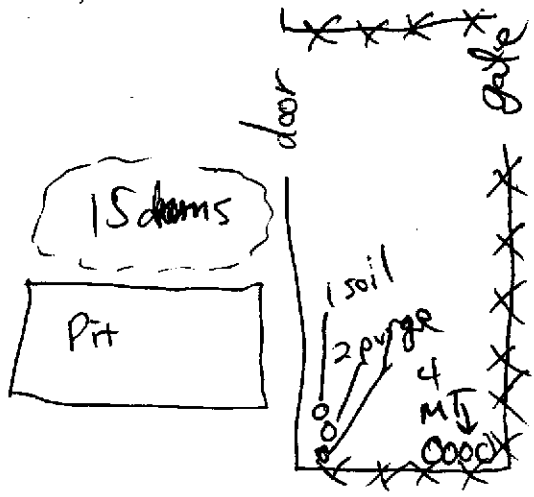
Client

Sampler

Day of Week

DRUM NUMBER OR ID	WELL OR SOURCE ID(s)	TYPE OF MATERIAL	AMOUNT OF MATERIAL IN DRUM	DATE ACCUMULATED OR GENERATED
	MW-1, 2, 3, 4, 6	Purge H ₂ O	~ 15 gal	9/13/01

Sketch locations of drums, include drum ID's



COMMENTS:

Number of Drums From This Event

1

Total Number of Drums At Site

15 w/ unknown full
4 MT
2 w/ purge H₂O
1 w/ soil cuttings

APPENDIX B

CERTIFIED ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY REPORTS



Sequoia Analytical

819 Striker Avenue, Suite 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

September 26, 2001

Charles Metzinger
EMCON/IT - Sacramento
326 N. Market Blvd.
Sacramento, CA 95834
RE: Hard Chrome Engineering / S109204

Enclosed are the results of analyses for samples received by the laboratory on 09/13/01. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew
Client Services Representative

CA ELAP Certificate Number 1624





EMCON/IT - Sacramento
1326 N. Market Blvd.
Sacramento CA, 95834

Project: Hard Chrome Engineering
Project Number: 792775 / 00002000
Project Manager: Charles Metzinger

Reported:
09/26/01 17:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	S109204-01	Water	09/13/01 09:30	09/13/01 14:50
MW-2	S109204-02	Water	09/13/01 11:20	09/13/01 14:50
MW-3	S109204-03	Water	09/13/01 10:20	09/13/01 14:50
MW-4	S109204-04	Water	09/13/01 11:55	09/13/01 14:50
MW-6	S109204-05	Water	09/13/01 10:55	09/13/01 14:50





EMCON/IT - Sacramento
 1326 N. Market Blvd.
 Sacramento CA, 95834

Project: Hard Chrome Engineering
 Project Number: 792775 / 00002000
 Project Manager: Charles Metzinger

Reported:
 09/26/01 17:24

Dissolved Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

MW-1 (S109204-01) Water Sampled: 09/13/01 09:30 Received: 09/13/01 14:50

Hexavalent Chromium	0.0052	0.0050	mg/l	1	1090197	09/14/01	09/14/01	EPA 7196A	
Mercury	ND	0.00020	"	"	1090226	09/21/01	09/21/01	EPA 7470A	
Antimony	ND	0.10	"	"	1090211	09/20/01	09/25/01	EPA 6010A	
Arsenic	ND	0.10	"	"	"	"	"	"	
Barium	ND	0.10	"	"	"	"	"	"	
Beryllium	ND	0.010	"	"	"	"	"	"	
Cadmium	ND	0.010	"	"	"	"	"	"	
Chromium	ND	0.010	"	"	"	"	"	"	
Cobalt	ND	0.040	"	"	"	"	"	"	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.10	"	"	"	"	"	"	
Molybdenum	ND	0.040	"	"	"	"	"	"	
Nickel	ND	0.040	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.010	"	"	"	"	"	"	
Thallium	ND	0.10	"	"	"	"	"	"	
Vanadium	ND	0.040	"	"	"	"	"	"	
Zinc	ND	0.010	"	"	"	"	"	"	

MW-2 (S109204-02) Water Sampled: 09/13/01 11:20 Received: 09/13/01 14:50

Hexavalent Chromium	55	5.0	mg/l	1000	1090197	09/14/01	09/14/01	EPA 7196A	
Mercury	0.00088	0.00020	"	1	1090226	09/21/01	09/21/01	EPA 7470A	
Antimony	ND	10	"	100	1090211	09/20/01	09/25/01	EPA 6010A	R-01
Arsenic	ND	10	"	"	"	"	"	"	R-01
Barium	ND	10	"	"	"	"	"	"	R-01
Beryllium	ND	1.0	"	"	"	"	"	"	R-01
Cadmium	ND	1.0	"	"	"	"	"	"	R-01
Chromium	1000	1.0	"	"	"	"	"	"	
Cobalt	ND	4.0	"	"	"	"	"	"	R-01
Copper	14	1.0	"	"	"	"	"	"	
Lead	ND	10	"	"	"	"	"	"	R-01
Molybdenum	ND	4.0	"	"	"	"	"	"	R-01
Nickel	ND	4.0	"	"	"	"	"	"	R-01
Selenium	ND	10	"	"	"	"	"	"	R-01
Silver	ND	1.0	"	"	"	"	"	"	R-01
Thallium	ND	10	"	"	"	"	"	"	R-01
Vanadium	ND	4.0	"	"	"	"	"	"	R-01
Zinc	2.3	1.0	"	"	"	"	"	"	





EMCON/IT - Sacramento
 1326 N. Market Blvd.
 Sacramento CA, 95834

Project: Hard Chrome Engineering
 Project Number: 792775 / 00002000
 Project Manager: Charles Metzinger

Reported:
 09/26/01 17:24

Dissolved Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (S109204-03) Water Sampled: 09/13/01 10:20 Received: 09/13/01 14:50									
Hexavalent Chromium	0.074	0.050	mg/l	10	1090197	09/14/01	09/14/01	EPA 7196A	
Mercury	ND	0.00020	"	1	1090226	09/21/01	09/21/01	EPA 7470A	
Antimony	ND	0.10	"	"	1090211	09/20/01	09/25/01	EPA 6010A	
Arsenic	ND	0.10	"	"	"	"	"	"	
Barium	ND	0.10	"	"	"	"	"	"	
Beryllium	ND	0.010	"	"	"	"	"	"	
Cadmium	ND	0.010	"	"	"	"	"	"	
Chromium	0.11	0.010	"	"	"	"	"	"	
Cobalt	ND	0.040	"	"	"	"	"	"	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.10	"	"	"	"	"	"	
Molybdenum	ND	0.040	"	"	"	"	"	"	
Nickel	ND	0.040	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.010	"	"	"	"	"	"	
Thallium	ND	0.10	"	"	"	"	"	"	
Vanadium	ND	0.040	"	"	"	"	"	"	
Zinc	ND	0.010	"	"	"	"	"	"	

MW-4 (S109204-04) Water Sampled: 09/13/01 11:55 Received: 09/13/01 14:50									
Hexavalent Chromium	0.011	0.0050	mg/l	1	1090197	09/14/01	09/14/01	EPA 7196A	
Mercury	ND	0.00020	"	"	1090226	09/21/01	09/21/01	EPA 7470A	
Antimony	ND	0.10	"	"	1090211	09/20/01	09/25/01	EPA 6010A	
Arsenic	ND	0.10	"	"	"	"	"	"	
Barium	0.10	0.10	"	"	"	"	"	"	
Beryllium	ND	0.010	"	"	"	"	"	"	
Cadmium	ND	0.010	"	"	"	"	"	"	
Chromium	1.3	0.010	"	"	"	"	"	"	
Cobalt	ND	0.040	"	"	"	"	"	"	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.10	"	"	"	"	"	"	
Molybdenum	ND	0.040	"	"	"	"	"	"	
Nickel	0.052	0.040	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.010	"	"	"	"	"	"	
Thallium	ND	0.10	"	"	"	"	"	"	
Vanadium	ND	0.040	"	"	"	"	"	"	
Zinc	ND	0.010	"	"	"	"	"	"	

Sequoia Analytical - Sacramento

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





EMCON/IT - Sacramento
1326 N. Market Blvd.
Sacramento CA, 95834

Project: Hard Chrome Engineering
Project Number: 792775 / 00002000
Project Manager: Charles Metzinger

Reported:
09/26/01 17:24

**Dissolved Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (S109204-05) Water Sampled: 09/13/01 10:55 Received: 09/13/01 14:50									
Hexavalent Chromium	ND	0.0050	mg/l	1	1090197	09/14/01	09/14/01	EPA 7196A	
Mercury	ND	0.00020	"	"	1090226	09/21/01	09/21/01	EPA 7470A	
Antimony	ND	0.10	"	"	1090211	09/20/01	09/25/01	EPA 6010A	
Arsenic	ND	0.10	"	"	"	"	"	"	
Barium	ND	0.10	"	"	"	"	"	"	
Beryllium	ND	0.010	"	"	"	"	"	"	
Cadmium	ND	0.010	"	"	"	"	"	"	
Chromium	0.031	0.010	"	"	"	"	"	"	
Cobalt	ND	0.040	"	"	"	"	"	"	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.10	"	"	"	"	"	"	
Molybdenum	ND	0.040	"	"	"	"	"	"	
Nickel	ND	0.040	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.010	"	"	"	"	"	"	
Thallium	ND	0.10	"	"	"	"	"	"	
Vanadium	ND	0.040	"	"	"	"	"	"	
Zinc	ND	0.010	"	"	"	"	"	"	





EMCON/IT - Sacramento
1326 N. Market Blvd.
Sacramento CA, 95834

Project: Hard Chrome Engineering
Project Number: 792775 / 00002000
Project Manager: Charles Metzinger

Reported:
09/26/01 17:24

**Dissolved Metals by EPA 6000/7000 Series Methods - Quality Control
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1090197 - General Preparation

Blank (1090197-BLK1)

Prepared & Analyzed: 09/14/01

Hexavalent Chromium ND 0.0050 mg/l

LCS (1090197-BS1)

Prepared & Analyzed: 09/14/01

Hexavalent Chromium 0.0499 0.0050 mg/l 0.0500 99.8 80-115

Matrix Spike (1090197-MS1)

Source: S109204-01

Prepared & Analyzed: 09/14/01

Hexavalent Chromium 0.0585 0.0050 mg/l 0.0500 0.0052 107 85-115

Matrix Spike Dup (1090197-MSD1)

Source: S109204-01

Prepared & Analyzed: 09/14/01

Hexavalent Chromium 0.0574 0.0050 mg/l 0.0500 0.0052 104 85-115 1.90 20

Batch 1090211 - 200.7/ No Digest

Blank (1090211-BLK1)

Prepared: 09/20/01 Analyzed: 09/25/01

Antimony	ND	0.10	mg/l							
Arsenic	ND	0.10	"							
Barium	ND	0.10	"							
Beryllium	ND	0.010	"							
Cadmium	ND	0.010	"							
Chromium	ND	0.010	"							
Cobalt	ND	0.040	"							
Copper	ND	0.010	"							
Lead	ND	0.10	"							
Molybdenum	ND	0.040	"							
Nickel	ND	0.040	"							
Selenium	ND	0.10	"							
Silver	ND	0.010	"							
Thallium	ND	0.10	"							
Vanadium	ND	0.040	"							
Zinc	ND	0.010	"							





EMCON/IT - Sacramento
 1326 N. Market Blvd.
 Sacramento CA, 95834

Project: Hard Chrome Engineering
 Project Number: 792775 / 00002000
 Project Manager: Charles Metzinger

Reported:
 09/26/01 17:24

Dissolved Metals by EPA 6000/7000 Series Methods - Quality Control Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1090211 - 200.7/ No Digest

LCS (1090211-BS1)

Prepared: 09/20/01 Analyzed: 09/25/01

Arsenic	5.05	0.10	mg/l	5.00		101	80-120			
Cadmium	4.94	0.010	"	5.00		98.8	80-120			
Chromium	4.93	0.010	"	5.00		98.6	80-120			
Nickel	5.00	0.040	"	5.00		100	80-120			
Zinc	5.02	0.010	"	5.00		100	80-120			

Matrix Spike (1090211-MS1)

Source: S109204-01

Prepared: 09/20/01 Analyzed: 09/25/01

Arsenic	1.98	0.10	mg/l	2.00	ND	99.0	80-120			
Cadmium	1.96	0.010	"	2.00	ND	98.0	80-120			
Chromium	1.93	0.010	"	2.00	ND	96.5	80-120			
Nickel	1.94	0.040	"	2.00	ND	97.0	80-120			
Zinc	1.98	0.010	"	2.00	ND	99.0	80-120			

Matrix Spike Dup (1090211-MSD1)

Source: S109204-01

Prepared: 09/20/01 Analyzed: 09/25/01

Arsenic	2.00	0.10	mg/l	2.00	ND	100	80-120	1.01	20	
Cadmium	1.97	0.010	"	2.00	ND	98.5	80-120	0.509	20	
Chromium	1.94	0.010	"	2.00	ND	97.0	80-120	0.517	20	
Nickel	1.95	0.040	"	2.00	ND	97.5	80-120	0.514	20	
Zinc	1.99	0.010	"	2.00	ND	99.5	80-120	0.504	20	

Batch 1090226 - EPA 7470A

Blank (1090226-BLK1)

Prepared & Analyzed: 09/21/01

Mercury	ND	0.00020	mg/l							
---------	----	---------	------	--	--	--	--	--	--	--

LCS (1090226-BS1)

Prepared & Analyzed: 09/21/01

Mercury	0.00457	0.00020	mg/l	0.00500		91.4	80-120			
---------	---------	---------	------	---------	--	------	--------	--	--	--





EMCON/IT - Sacramento
1326 N. Market Blvd.
Sacramento CA, 95834

Project: Hard Chrome Engineering
Project Number: 792775 / 00002000
Project Manager: Charles Metzinger

Reported:
09/26/01 17:24

Dissolved Metals by EPA 6000/7000 Series Methods - Quality Control
Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1090226 - EPA 7470A

Matrix Spike (1090226-MS1)		Source: S109247-03			Prepared & Analyzed: 09/21/01					
Mercury	0.00445	0.00020	mg/l	0.00500	ND	89.0	75-125			
Matrix Spike Dup (1090226-MSD1)		Source: S109247-03			Prepared & Analyzed: 09/21/01					
Mercury	0.00461	0.00020	mg/l	0.00500	ND	92.2	75-125	3.53	20	





EMCON/IT - Sacramento
1326 N. Market Blvd.
Sacramento CA, 95834

Project: Hard Chrome Engineering
Project Number: 792775 / 00002000
Project Manager: Charles Metzinger

Reported:
09/26/01 17:24

Notes and Definitions

R-01 The Reporting Limit for this analyte has been raised to account for matrix interference.
DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference



CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

IT CORPORATION - 1326 North Market Boulevard, Sacramento, CA 95834

Purchase Order: 168468

(916) 928-3300 FAX (916) 928-3341

Lab: SEQUOIA ANALYTICAL

Project Name: **Hard Chrome Engineering**
 Project Number: **792775 / 00002000**
 Project Manager: **Charles Metzinger**
 Company: **IT CORPORATION**
 Address: **1326 North Market Boulevard**
 Sacramento, CA 95834
 Phone: **(916) 928-3300**
 FAX: **(916) 928-3341**
 Sampler's Signature: R Morgan

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers	Cam 17 Metals (Field Filtered)	Hexavalent Chromium by EPA Method 7196 (24-Hr Hold) (Field Filtered)	Analysis Requested										REMARKS				
						3	3															
						HNO3	NP															Container Types
																						Preservations
MW-1	9/13/01	0930		water	2	1	1															
MW-2		1120		water	2	1	1															
MW-3		1020		water	2	1	1															
MW-4		1155		water	2	1	1															
MW-5				water	2	1	1															No sample
MW-6	9/13/01	1055		water	2	1	1															
MW-1B				water	2	1	1															No sample

RELINQUISHED BY		RECEIVED BY		RELINQUISHED BY		RECEIVED BY		24 hr _____ 48 hr _____ 5 day _____ Standard (~10-15 working days) Provide Verbal Preliminary Results _____ Provide FAX Preliminary Results _____ Requested Report Date: _____	REPORT REQUIREMENTS <input checked="" type="checkbox"/> I. Routine Report <input type="checkbox"/> II. Report (includes DUP, MS MSD, as required, may be charged as samples) <input type="checkbox"/> III. Data Validation Report (includes All Raw Data) RWQCB (MDLs/PQLs/TRACE#)
Signature	<u>R Morgan</u>	Signature	<u>Monica Greger</u>	Signature		Signature			
Printed Name	<u>Bob Morgan</u>	Printed Name	<u>Monica Greger</u>	Printed Name		Printed Name			
Firm	<u>IT Group</u>	Firm	<u>Sequoia</u>	Firm		Firm			
Date/Time	<u>9/13/01 1430</u>	Date/Time	<u>9/13/01 1430</u>	Date/Time		Date/Time			

RELINQUISHED BY		RECEIVED BY		Special Instructions/Comments: Chrom VI has a 24 hour hold time. All samples need to be field filtered. ✓ Sequoia Analytical 819 Striker Ave, Ste. 8 Sacramento, Ca 95834 916-921-9600 Ron Chew	Container Types Key: 40 ml VOA: 1 250 ml LPE: 2 500 ml LPE: 3 1 liter HDPE: 4 500 ml glass: 5 1 liter glass: 6 2x6 s/s ring: 7 glass jar: 8
Signature		Signature			
Printed Name		Printed Name			
Firm		Firm			
Date/Time		Date/Time			