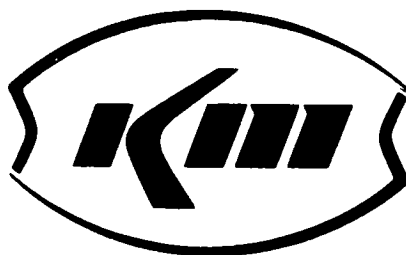


KERR-McGEE CORPORATION



SEMI- ANNUAL PERFORMANCE REPORT
CHROMIUM MITIGATION PROGRAM

KERR-McGEE CHEMICAL CORPORATION
HENDERSON, NEVADA

JANUARY- JUNE 1999
JULY 28, 1999



KERR-McGEE CHEMICAL LLC

POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

July 28, 1999

RECEIVED

JUL 29 1999

Mr. Doug Zimmerman
State of Nevada
Division of Environmental Protection
333 West Nye Lane
Carson City, Nevada 89710

ENVIRONMENTAL PROTECTION

Subject: First Half 1999 Performance Report
Chromium Mitigation Program

Enclosed are two copies of the First Half 1999, Semi-Annual Chromium Mitigation Program Report for the Kerr-McGee Chemical LLC, Henderson facility.

This Report presents information regarding the groundwater interception, treatment and recharge systems of the chromium mitigation program.

If you have any questions or comments concerning this information, please contact me at (702) 651-2234.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

smc\99-1ST SEMIANNUAL CV LTR.DOC

cc: PSCorbett
ALDooley
WJGanus
MJPorterfield
TWRreed
J Livak, NDEP
V King, NDEP

SEMI-ANNUAL PERFORMANCE REPORT
CHROMIUM MITIGATION PROGRAM
KERR-McGEE CHEMICAL LLC
HENDERSON, NEVADA

JANUARY - JUNE 1999

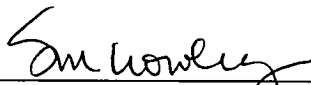
Submitted in Accordance with:

Chromium Mitigation Program
Consent Order
September 9, 1986

Prepared by:

Thomas W. Reed
Hydrology Department
Kerr-McGee Corporation

July 28, 1999



Susan Crowley, Staff Environmental Specialist
Kerr-McGee Chemical LLC
Henderson, Nevada

TABLE OF CONTENTS

INTRODUCTION.....	1
GROUNDWATER SURFACE CONFIGURATION	2
INTERCEPTOR SYSTEM PERFORMANCE.....	2
ANNUAL CHROMIUM SAMPLING.....	5
IMPACT OF DISPOSAL SYSTEM ON DOWNGRAIDENT WATER LEVELS	5
CHROMIUM TREATMENT SYSTEM EFFECTIVENESS	5
RECOVERY/TREATMENT SYSTEM MAINTENANCE	5
CONCLUSIONS	7
PROPOSED FUTURE ACTIVITIES.....	7

APPENDICES

A - GROUNDWATER ELEVATIONS

PLATES

PLATE 1- TOTAL CHROMIUM CONCENTRATIONS IN GROUNDWATER

LIST OF FIGURES

- FIGURE 1 CONSENT ORDER MONITORING AREA
- FIGURE 2 CONSENT ORDER MONITORING AREA - POTENTIOMETRIC
SURFACE MAP: FEBRUARY 4, 1999
- FIGURE 3 CONSENT ORDER MONITORING AREA - POTENTIOMETRIC
SURFACE MAP: MAY 4, 1999
- FIGURE 4 UPGRADIENT MONITOR WELLS GRAPH
- FIGURE 5 DOWNGRADIENT MONITOR WELLS GRAPH
- FIGURE 6 LOCATION OF APPENDIX J WELLS
- FIGURE 7 APPENDIX J WELLS GRAPH
- FIGURE 8 INTERCEPTOR LINE GRAPH

LIST OF TABLES

- TABLE 1 TOTAL CHROMIUM (mg/L) IN SELECTED GROUNDWATER MONITOR WELLS
- TABLE 2 INTERCEPTOR WELL DISCHARGE RATES
- TABLE 3 TOTAL CHROMIUM CONCENTRATION (mg/L) IN APPENDIX J WELLS

SEMI-ANNUAL PERFORMANCE REPORT
CHROMIUM MITIGATION PROGRAM
KERR-McGEE CHEMICAL LLC
HENDERSON, NEVADA

INTRODUCTION

In accordance with the Consent Order for cleanup of chromium contaminated groundwater at the Henderson facility, finalized September 9, 1986, Kerr-McGee Chemical LLC (KMCLLC) submits this semi-annual performance report to the Nevada Department of Environmental Protection. This report, covering the period January through June, 1999, summarizes performance data for the groundwater treatment plant and evaluates the effectiveness of the groundwater interception and treatment system installed to carry out the chromium mitigation program.

In December 1998, the Underground Injection Control (UIC) Permit (No. UNEV98203) for the Kerr-McGee chromium mitigation system was modified to include changes to the injection program. The treated groundwater from the chromium mitigation system is now piped to an on-site impoundment and is no longer reinjected into the system recharge trenches. The permit modification also allows for reinjection of clean Lake Mead water to maintain groundwater levels downgradient from the interception well line. All data requirements relative to the UIC permit modification are contained in quarterly reports submitted by KMCLLC.

GROUNDWATER SURFACE CONFIGURATION

Figure 1 illustrates the Consent Order Monitoring Area as defined in Appendix D of the Consent Order, and shows the locations of all groundwater interceptor and monitor wells installed by KMCLLC within this area. Appendix A of this report lists monthly groundwater elevations recorded since January 1997 in wells within the Consent Order area.

The water table configuration is presented as potentiometric surface maps for the first half of 1999, reflecting quarterly groundwater level measurements. Figure 2 shows the potentiometric surface within the consent order monitoring area for the first quarter of 1999. Groundwater elevation data were recorded on February 4, 1999. Figure 3 presents the groundwater potentiometric surface map for the second quarter of 1999, based on groundwater elevation data recorded on May 4, 1999.

INTERCEPTOR SYSTEM PERFORMANCE

Figures 2 and 3 show the potentiometric surface configuration in the interceptor area during the first half of 1999. Although the potentiometric surface maps do not generally show overlapping drawdown cones along the entire interceptor line, the majority of interceptor wells have drawn groundwater levels down to and below the Muddy Creek

contact. Drawdowns to this degree indicate that the alluvial aquifer is locally being depleted of water and that interception of groundwater has been maximized with this recovery system. Unrelated to the interception program, groundwater levels have declined across the area due to the discontinuation of upgradient water infiltration from the Beta Ditch. Since 1987, the Beta Ditch has been utilized almost exclusively for stormwater flow.

Quarterly groundwater samples are collected for chromium analyses in wells located both upgradient and downgradient from the recharge trench. The data are shown in Table 1, and are presented graphically as Figures 4 and 5. The M-70 series wells presented in Figure 4 are located upgradient from the recharge trench. The M-80 series wells presented in Figure 5 are located downgradient from the recharge trench. The M-70 series wells show a gradual increase or leveling off in chromium concentrations. The M-80 series wells exhibit a leveling off or decline in chromium concentrations except for well M-86. This well is showing an increase in chromium which prompted the installation of new interceptor wells I-P and I-Q in March 1998. Additional interceptor wells have since been added in this area to halt the downgradient movement.

Chromium concentration data from the five Consent Order Appendix J wells (see Figure 6) are contained in Table 3. Figure 7 presents these data graphically. During the first half of 1999 well M-11 displayed a continual decline in chromium concentration. Wells

M-36 and M-72, downgradient from M-11 but still upgradient from the recharge trenches, showed a gradual increase in chromium. As mentioned earlier, well M-86 is showing an increase in chromium concentration. Well M-23, downgradient from the recharge system, continues to maintain a steady level of chromium concentration.

KMCLLC instituted a management program to assure maximization of groundwater removal at the individual well locations along the interceptor line by focusing on those wells showing the highest chromium concentrations. Figure 8 portrays chromium concentration for each interceptor well for the past year. Discharge rates for each well are monitored and adjusted to provide maximum recovery of chromium based on the potentiometric surface configuration, chromium concentration, and well production capability. Table 2 lists the pumping rate of each interceptor well for June 1997 and June 1998 as compared to June 1999.

INTERCEPTOR WELL INSTALLATION

In response to continued increases in chromium concentration in the vicinity of monitor well M-86, KMCLLC installed three additional interceptor wells in February 1999. These wells, I-T, I-U, and I-V, have been tied in with the existing interceptor system. As pumping progresses, adjacent and downgradient monitor wells will be utilized to determine the effectiveness of these new wells.

ANNUAL CHROMIUM SAMPLING

Annual chromium groundwater sampling for all facility wells was conducted in May 1999.

Plate 1 displays the total chromium map constructed from these data. As compared to the June 1993 total chromium map for the facility (see report entitled Groundwater Interception System Evaluation Report - September 15, 1993), chromium concentrations have markedly declined in the historic source area, even though concentrations downgradient from the source area continue to increase. The decrease in the upgradient chromium concentration since 1992, as demonstrated in well M-11 (see Figure 7), strongly suggests that the chromium plume is in a permanent decline which will continue to "move" as a front downgradient to the north toward recovery.

RECOVERY/TREATMENT SYSTEM MAINTENANCE

Approximately every twenty days, the electrodes in the treatment plant's electrolytic cells deteriorate to the point they require replacement. During electrode replacement, a backup cell is placed in active service in the circuit to maintain groundwater treatment.

All interceptor wells are checked for operation each day; flow rates are recorded for each well twice weekly. Flowmeter readings (total volume) are recorded for each time-marking well twice weekly. These records indicate when a pump needs to be

replaced or a flow rate adjusted. In addition, other maintenance associated with maintaining treatment plant operations was performed.

During the first half 1999, maintenance work was performed on the pumping systems in interceptor wells I-H (2/4 – 2/15), I-O (3/15 – 3/17; 3/23 – 4/8), I-R (4/27 – 5/14), I-V (5/27 – 6/8), I-C (6/2 – 6/9), and I-V (6/22 – 6/29). General repairs were made to the treatment plant system on 2/2, 2/4, 2/5, 2/16, 2/17, 3/22, 5/12, 5/28, 5/31, 6/1 and 6/30.

CONCLUSIONS

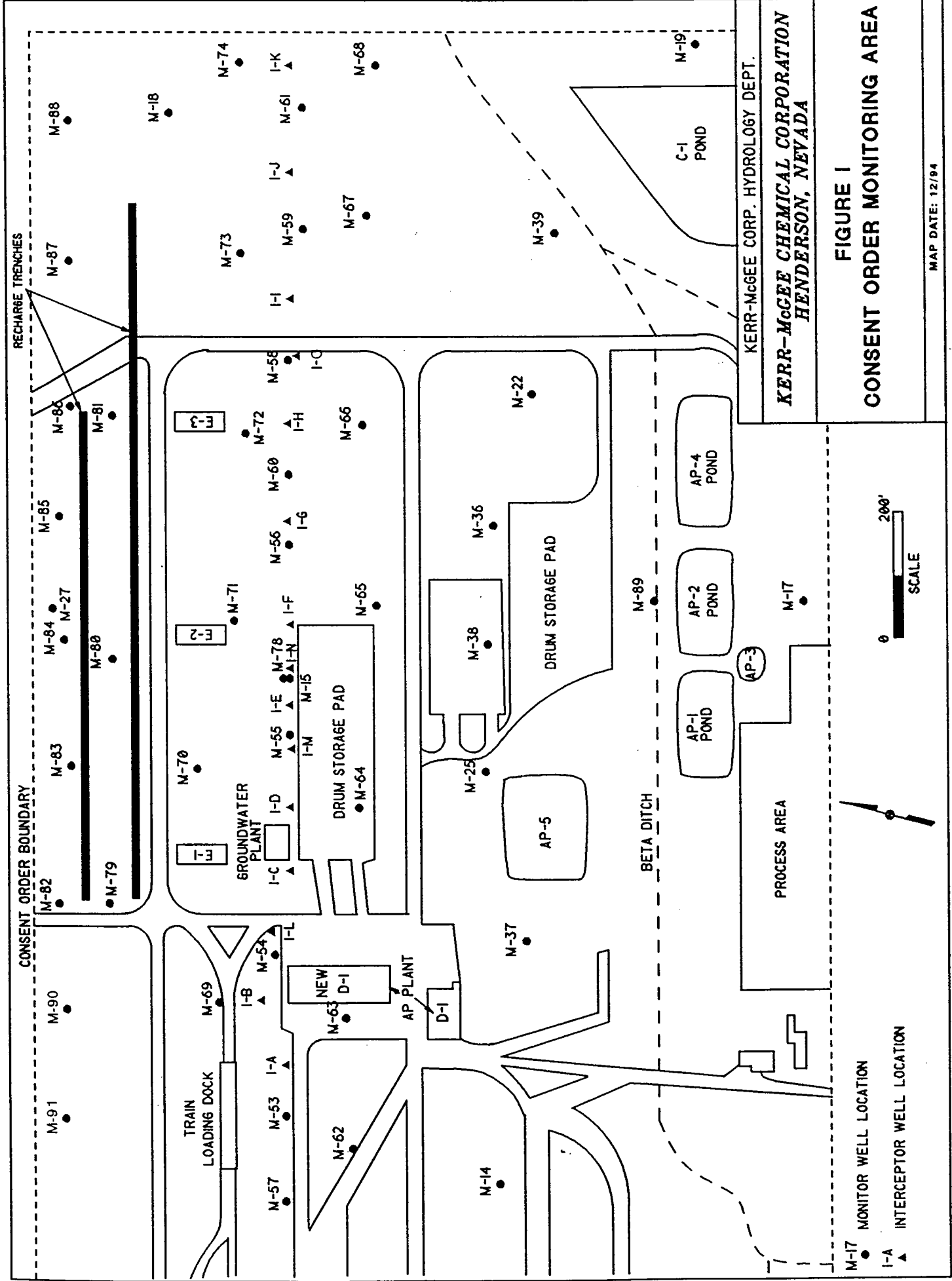
Chromium concentrations in the majority of monitor wells immediately downgradient from the recharge trenches have stabilized or declined indicating that the recharge system now receiving Lake Mead water is functioning properly. Chromium concentrations in monitor wells immediately downgradient from the groundwater interception wells have shown an increase or leveling off of chromium concentrations in response to increasing concentrations of chromium moving downgradient from the historic source area.

PROPOSED FUTURE ACTIVITIES

KMCLLC will continue to record water levels in the consent order area on a quarterly basis. Quarterly potentiometric surface maps will be developed. The effect of changing the pumping rates of the interceptor wells will be monitored, and appropriate responses (i.e.- future pump rate adjustments) will be taken to assure optimal drawdown and plume interception. The chromium concentration increase in the vicinity of monitor well M-86 will be monitored to evaluate the affect of new interceptor wells. Any additional modifications to the recovery system will be proposed in the next semiannual report.

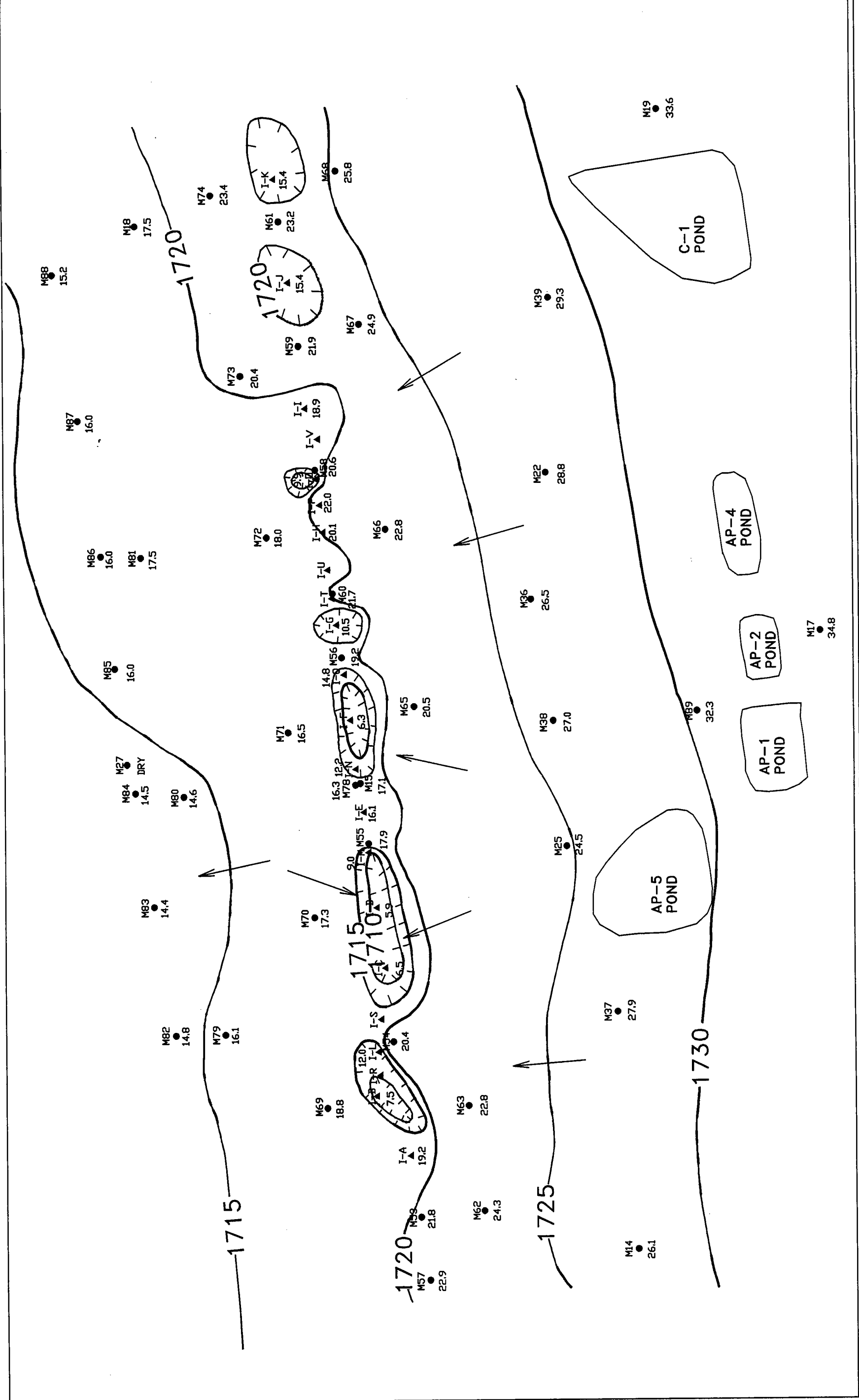
KMCLLC will explore the potential for merging the data associated with this semi-annual report with the quarterly reporting requirements in the modified UIC permit.

FIGURES

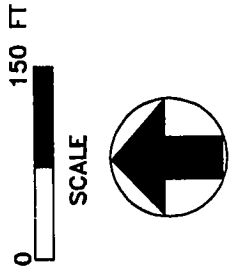


KERR-McGEE CORP. HYDROLOGY DEPT.
KERR-McGEE CHEMICAL CORPORATION
HENDERSON, NEVADA

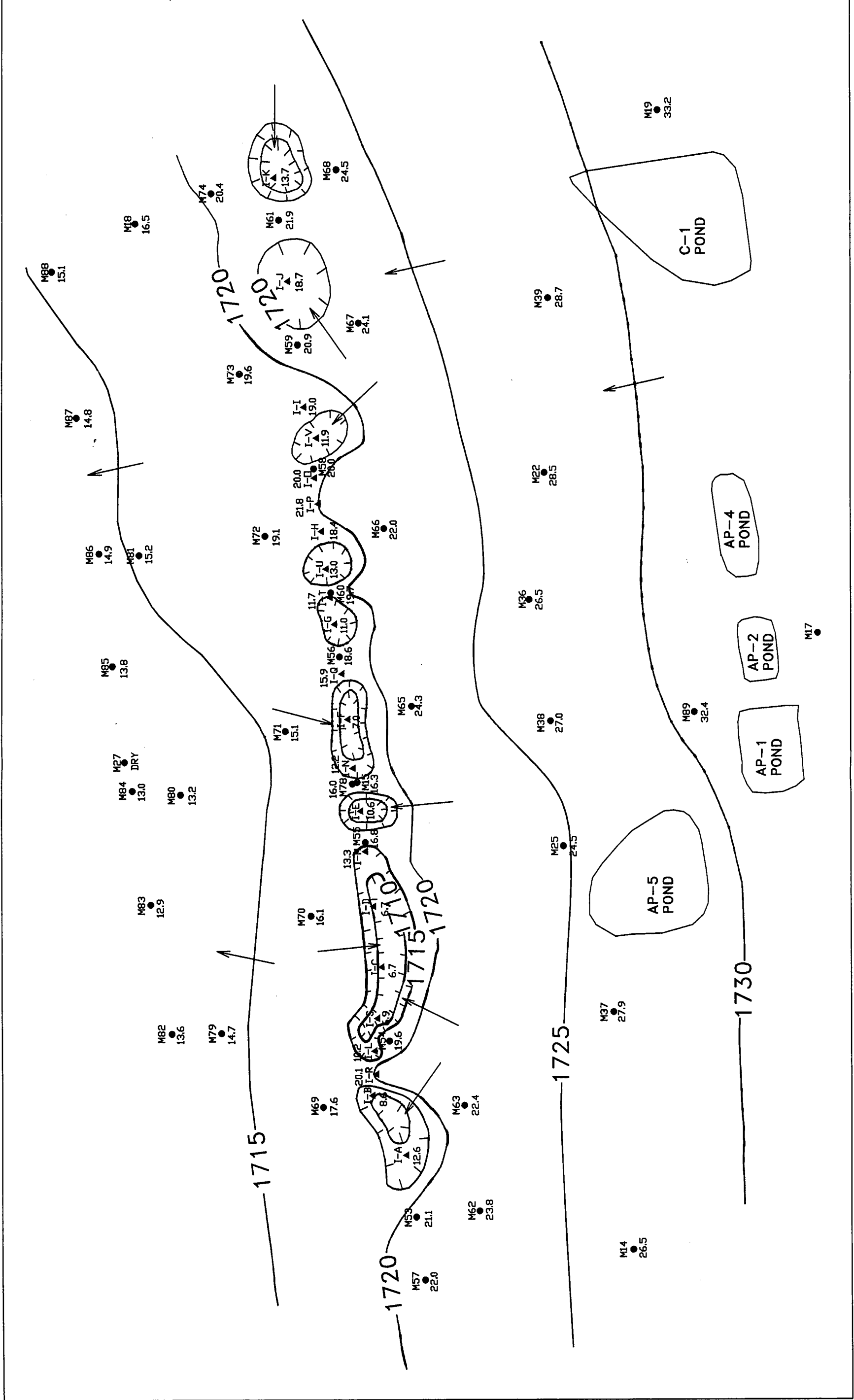
FIGURE 1
CONSENT ORDER MONITORING AREA



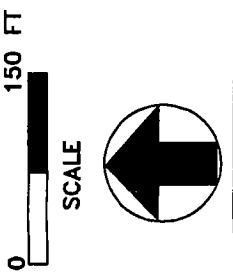
KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA
 FIGURE 2
 CONSENT ORDER MONITORING AREA
 POTENTIOMETRIC SURFACE MAP
 FEBRUARY 4, 1999



26.3 ● WATER LEVEL WELL LOCATION (REF. 1700 FT, MSL)
 ▲ INTERCEPTOR WELL LOCATION
 — POTENTIOMETRIC SURFACE CONTOUR
 LINE (FT MSL) CONTOUR INTERVAL = 5 FT
 WATER LEVEL DATA RECORDED FEBRUARY 4, 1999
 —————> DIRECTION OF GROUNDWATER FLOW

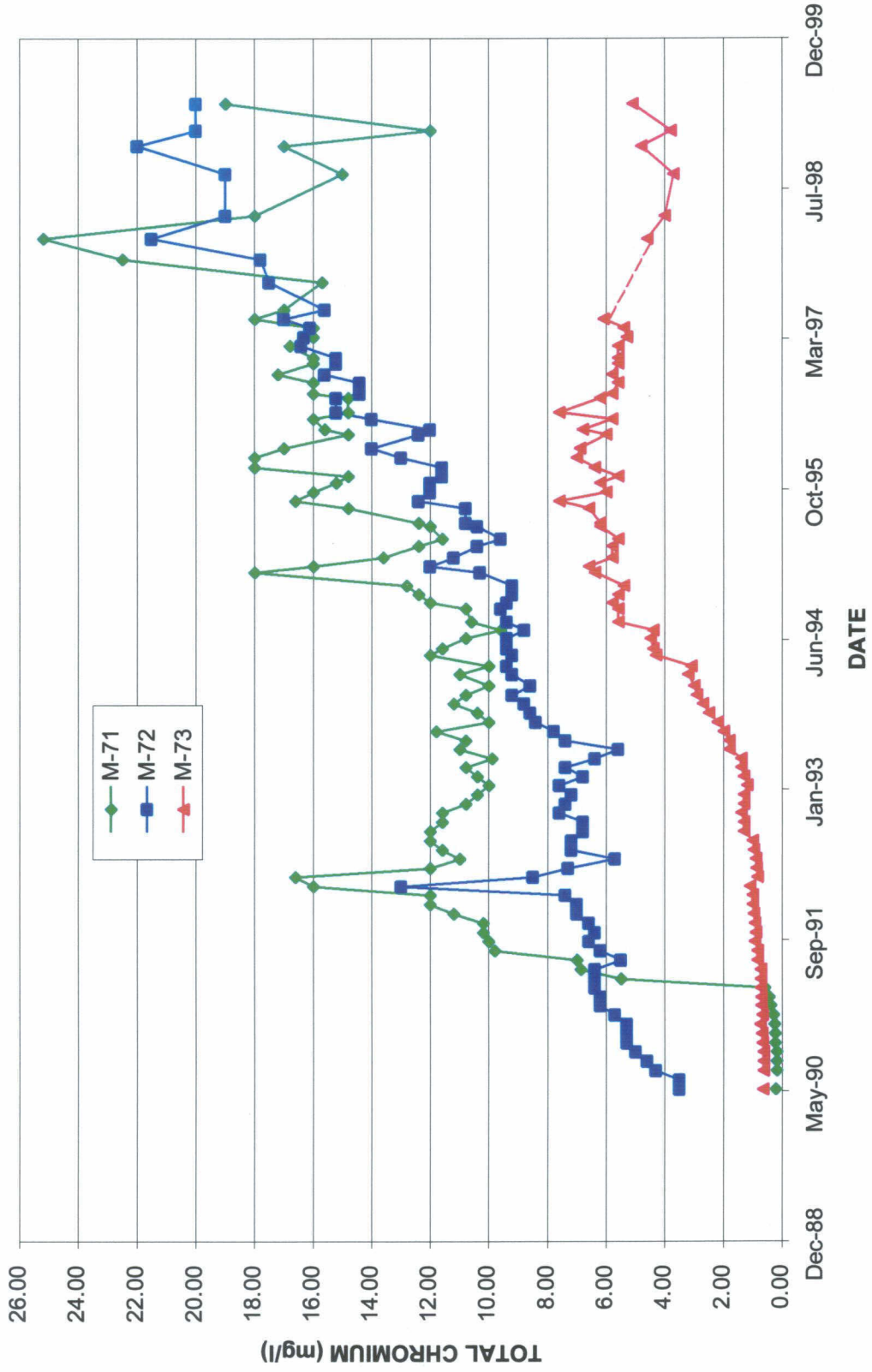


KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA
 FIGURE 3
 CONSENT ORDER MONITORING AREA
 POTENTIOMETRIC SURFACE MAP
 MAY 4, 1999



26.3 ● WATER LEVEL WELL LOCATION (REF. 1700 FT, MSL)
 ● INTERCEPTOR WELL LOCATION
 ▲ POTENTIOMETRIC SURFACE CONTOUR
 LINE (FT MSL) CONTOUR INTERVAL = 5 FT
 WATER LEVEL DATA RECORDED MAY 4, 1999
 —→ DIRECTION OF GROUNDWATER FLOW

**FIGURE 4: UPGRADIENT MONITOR WELLS
KMCLLC HENDERSON, NEVADA FACILITY**



**FIGURE 5: DOWNGRADIENT MONITOR WELLS
KMCLLC HENDERSON, NEVADA FACILITY**

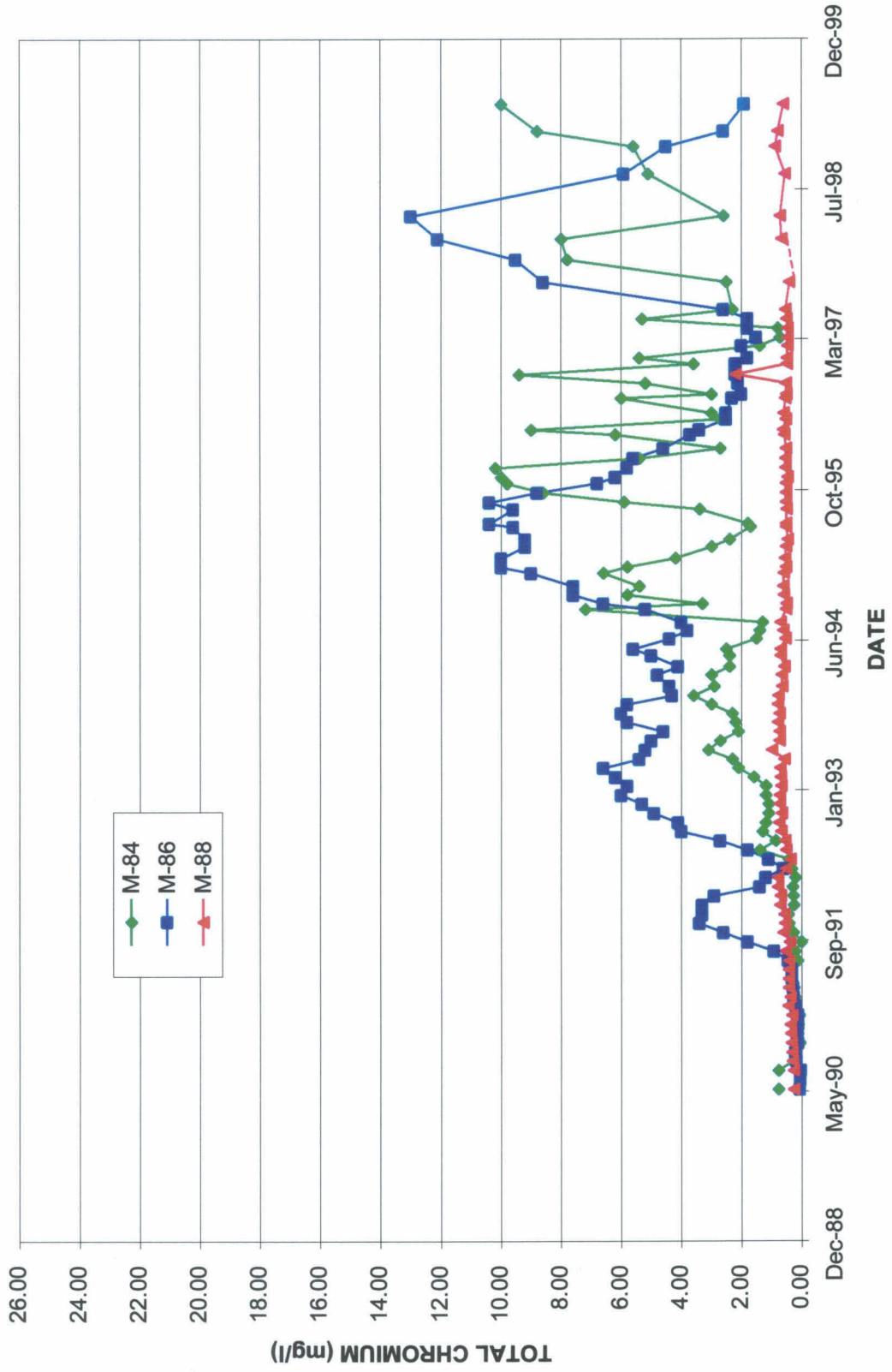
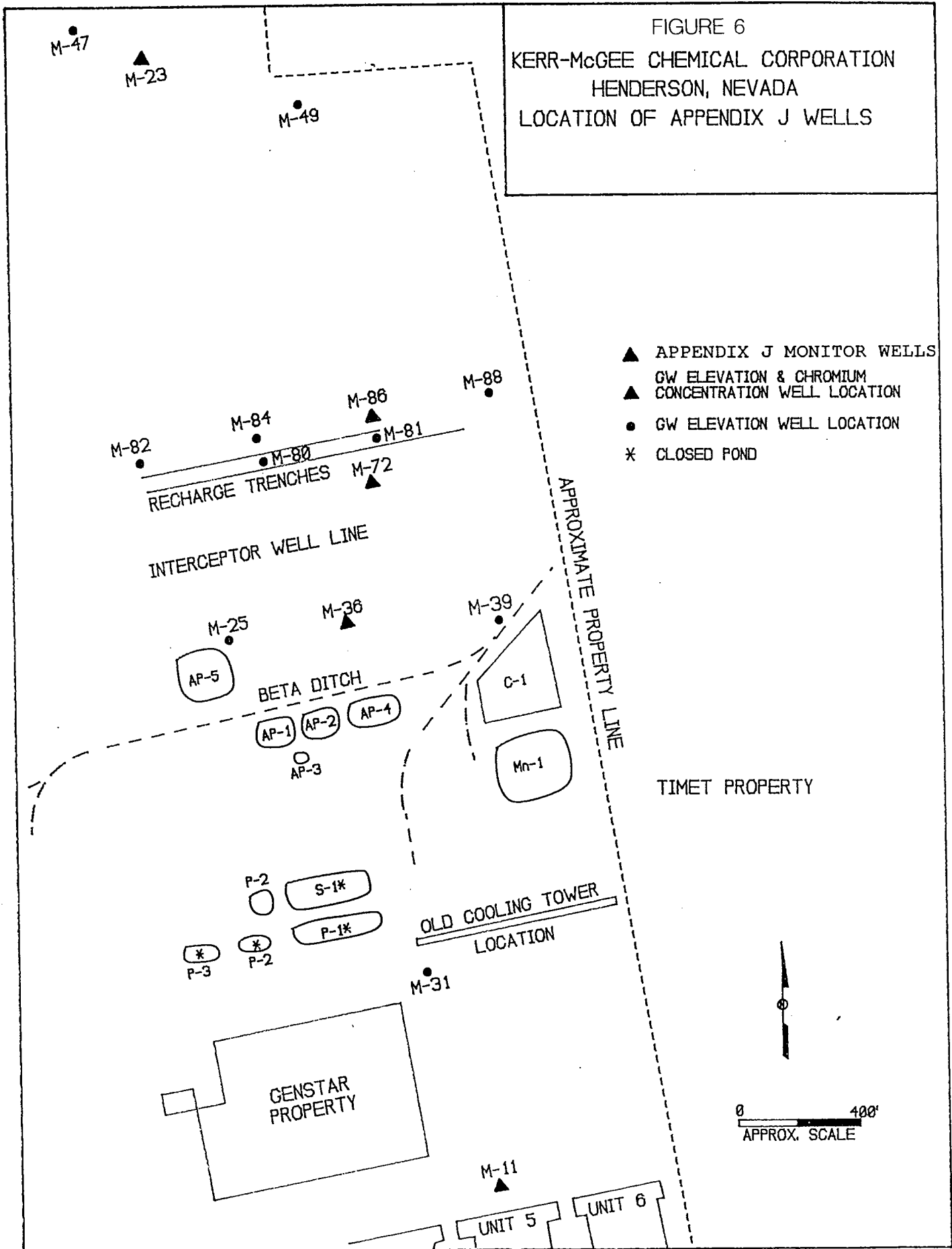
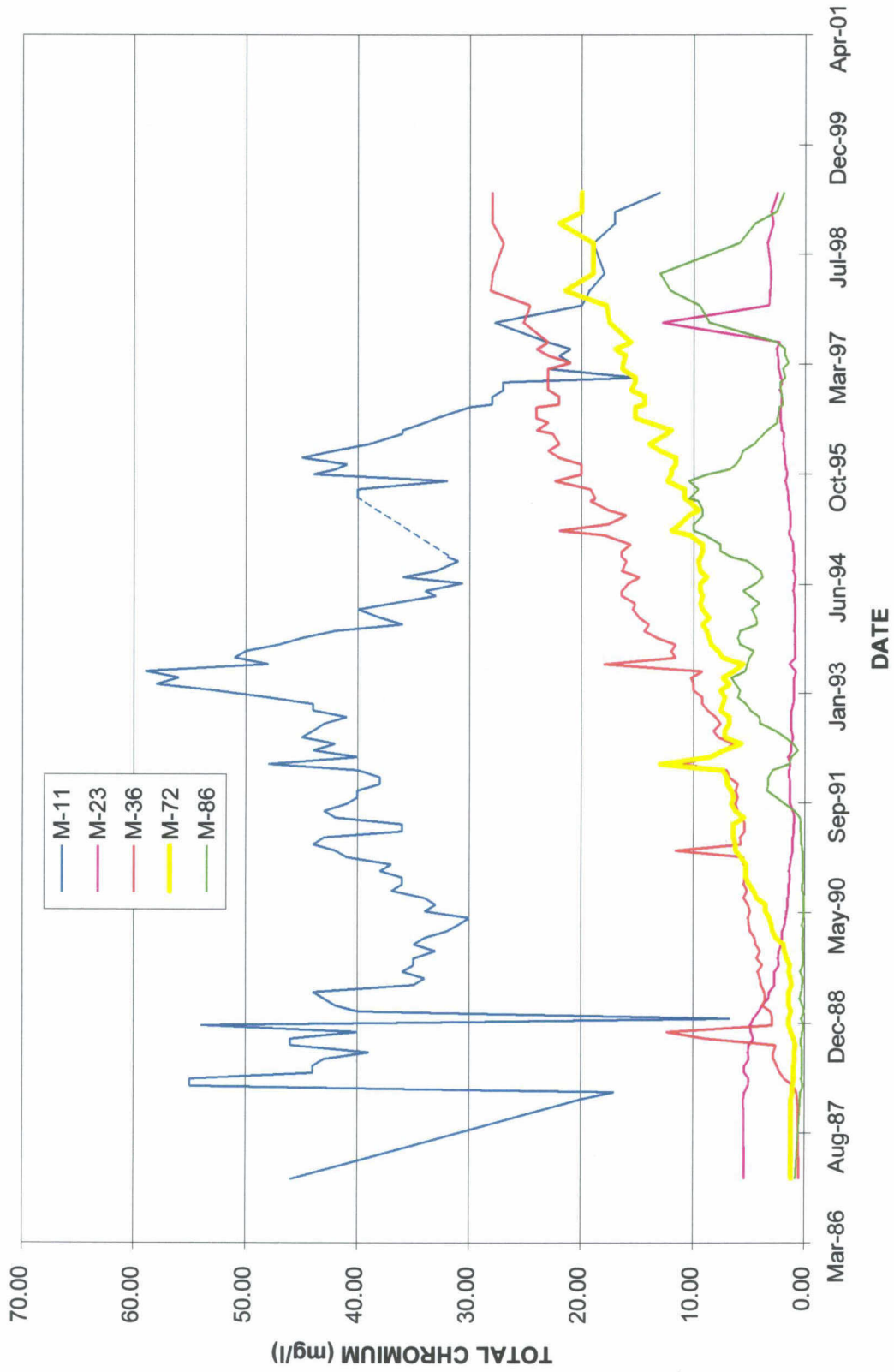


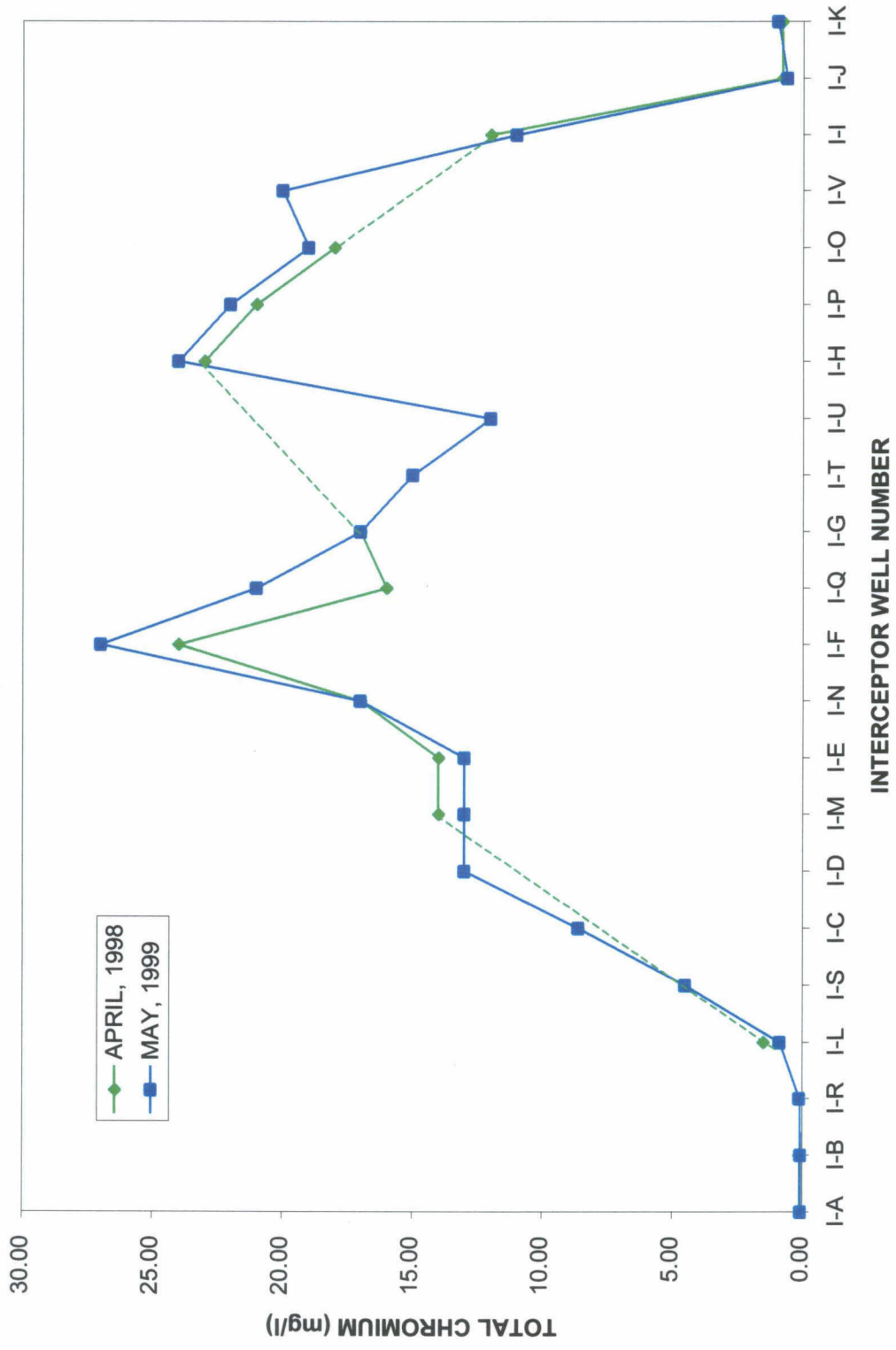
FIGURE 6
 KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA
 LOCATION OF APPENDIX J WELLS



**FIGURE 7: APPENDIX J WELLS
KMCLLC HENDERSON, NEVADA FACILITY**



**FIGURE 8: INTERCEPTOR WELL LINE GRAPH
KMCLLC HENDERSON, NEVADA FACILITY**



TABLES

TABLE 1

TOTAL CHROMIUM (mg/l)
IN SELECTED MONITOR WELLS
KMCLLC HENDERSON NEVADA

DATE	WELL #			
	M-71	M-73	M-84	M-88
Jan-94	10.00	3.00	2.90	0.65
Feb-94	11.00	3.20	3.00	0.67
Mar-94	10.00	3.10	2.40	0.59
Apr-94	12.00	4.30	2.40	0.71
May-94	11.60	4.40	2.50	0.70
Jun-94	10.80	4.50	1.50	0.54
Jul-94	9.60	4.40	1.40	0.62
Aug-94	10.60	5.60	1.30	0.71
Sep-94	10.80	5.60	7.20	0.53
Oct-94	12.00	5.80	3.30	0.50
Nov-94	12.40	5.60	5.80	0.60
Dec-94	12.80	5.40	5.40	0.62
Jan-95	18.00	6.40	6.60	0.60
Feb-95	16.00	6.60	5.80	0.52
Mar-95	13.60	5.80	4.20	0.57
Apr-95	12.40	5.80	3.00	0.52
May-95	11.60	5.60	2.40	0.48
Jun-95	12.00	6.20	1.70	0.52
Jul-95	12.40	6.20	1.80	0.52
Aug-95	14.80	6.60	3.40	0.51
Sep-95	16.60	7.60	5.90	0.52
Oct-95	16.00	6.00	8.60	0.52
Nov-95	15.20	6.20	9.80	0.53
Dec-95	14.80	5.60	10.00	0.47
Jan-96	18.00	6.40	10.20	0.54
Feb-96	18.00	7.00	5.40	0.55
Mar-96	17.00	6.90	2.70	0.53
Apr-96	14.80	6.00	6.20	0.59
May-96	15.60	6.80	9.00	0.61
Jun-96	16.00	5.80	2.70	0.53
Jul-96	14.80	7.60	3.00	0.60
Aug-96	14.80	6.20	6.00	0.55
Sep-96	16.00	5.80	3.00	0.51
Oct-96	16.00	5.60	5.20	0.53
Nov-96	17.20	5.80	9.40	2.20
Dec-96	16.00	5.60	3.60	0.49
Jan-97	16.00	5.60	5.40	0.49
Feb-97	16.80	5.60	1.40	0.47
Mar-97	16.00	5.30	0.72	0.48
Apr-97	16.00	5.40	0.80	0.48
May-97	18.00	6.10	5.30	0.50
Jun-97	17.00		2.30	0.54
Sep-97	15.70		2.50	0.42
Dec-97	22.50		7.80	
Feb-98	25.20	4.60	8.00	0.68
Apr-98	18.00	4.00	2.60	0.73
Sep-98	15.00	3.70	5.10	0.56
Dec-98	17.00	4.80	5.60	0.89
Feb-99	12.00	3.80	8.80	0.80
May-99	19.00	5.10	10.00	0.62

TABLE 2
 INTERCEPTOR WELL DISCHARGE RATES
 DISCHARGE RATE (GPM)

WELL #	JUNE 1997	JUNE 1998	JUNE 1999
I-A	1.0	1.1	0.9
I-B	1.5	1.7	1.2
I-C	2.4	3.4	1.5
I-D	0.7	0.9	0.5
I-E	0.4	0.3	0.2
I-F	5.4	7.8	4.5
I-G	0.1	0.2	0.2
I-H	0.7	1.0	0.4
I-I	5.4	5.5	3.7
I-J	4.0	5.1	1.8
I-K	3.2	3.6	3.2
I-L	1.1	1.3	0.8
I-M	2.4	3.4	2.3
I-N	0.9	2.6	1.3
I-O	<u>1.3</u>	1.8	0.9
I-P		1.1	0.5
I-Q		<u>0.03</u>	0.3
I-R			0.5
I-S			0.7
I-T			0.3
I-U			0.5
I-V			<u>0.5</u>
TOTAL	30.5	40.8	26.7

TABLE 3
TOTAL CHROMIUM CONCENTRATION (mg/l)
IN APPENDIX J WELLS
KERR-McGEE CHEMICAL LLC
HENDERSON, NEVADA

DATE	WELL #				
	M-11	M-23	M-36	M-72	M-86
Jan-94	38.00	0.90	14.80	8.60	4.40
Feb-94	40.00	0.88	15.40	9.20	4.80
Mar-94	37.00	0.91	15.20	9.40	4.10
Apr-94	33.00	1.00	16.40	9.20	5.00
May-94	34.00	1.10	16.40	9.40	5.60
Jun-94	30.60	1.00	15.80	9.40	4.40
Jul-94	36.00	0.90	14.80	8.80	3.80
Aug-94	33.00	1.08	16.40	9.40	4.00
Sep-94	31.00	0.96	16.00	9.60	5.20
Oct-94	32.00	1.00	16.40	9.40	6.60
Nov-94		1.10	16.40	9.20	7.60
Dec-94		1.10	15.60	9.20	7.60
Jan-95		1.40	18.00	10.31	9.00
Feb-95		1.40	22.00	12.00	10.00
Mar-95		1.30	17.60	11.20	10.00
Apr-95		1.30	16.00	10.40	9.20
May-95		1.40	17.60	9.60	9.20
Jun-95		1.50	19.20	10.40	9.60
Jul-95	40.00	1.50	18.80	10.80	10.40
Aug-95	40.00	1.60	19.20	10.80	9.60
Sep-95	32.00	1.80	22.40	12.40	10.40
Oct-95	44.00	1.60	20.00	12.00	8.80
Nov-95	42.00	1.70	20.00	12.00	6.80
Dec-95	41.00	1.80	20.00	11.60	6.20
Jan-96	45.00	1.80	22.00	11.60	5.80
Feb-96	42.00	1.90	23.00	13.00	5.60
Mar-96	39.00	2.00	22.00	14.00	4.60
Apr-96	36.00	1.90	22.60	12.40	3.70
May-96	36.00	2.10	24.00	12.00	3.40
Jun-96	34.00	2.20	23.00	14.00	2.50
Jul-96	33.00	2.20	24.00	15.20	2.50
Aug-96	30.00	2.20	24.00	15.20	2.30
Sep-96	28.00	2.10	22.00	14.40	2.00
Oct-96	28.00	2.10	22.00	14.40	2.10
Nov-96	27.00	2.30	23.00	15.60	2.20
Dec-96	27.00	2.10	23.00	15.20	2.20
Jan-97	15.00	2.20	23.00	15.20	1.80
Feb-97	23.00	2.40	23.00	16.40	2.00
Mar-97	21.00	2.40	21.00	16.30	1.50
Apr-97	22.00	2.50	23.00	16.10	1.80
May-97	21.00	2.60	24.00	17.00	1.80
Jun-97	23.00	2.30	23.00	15.60	2.60
Sep-97	27.80	12.80	25.20	17.50	8.60
Dec-97	20.00	3.30	24.60	17.80	9.50
Feb-98	19.30	3.20	28.20	21.50	12.10
Apr-98	18.00	3.10	28.00	19.00	13.00
Sep-98	19.00	3.40	27.00	19.00	5.90
Dec-98	17.00	2.90	28.00	22.00	4.50
Feb-99	17.00	3.10	28.00	20.00	2.60
May-99	13.00	2.50	28.00	20.00	1.90

PLATES

APPENDIX A

APPENDIX A
GROUNDWATER ELEVATIONS

**KERR-McGEE CHEMICAL LLC
HENDERSON, NEVADA FACILITY
GROUNDWATER ELEVATIONS**

TOC-->	M-11 1815.54 DTW	ELEV	M-14 1759.83 DTW	ELEV	M-15 1750.98 DTW	ELEV	M-17 1770.92 DTW	ELEV	M-18 1740.48 DTW	ELEV	M-19 1766.77 DTW	ELEV	M-22A 1759.47 DTW	ELEV	M-23 1712.78 DTW	ELEV	M-25 1759.93 DTW	ELEV	M-27 1742.25 DTW	ELEV
08-Jan-97	42.60	1770.86					34.40	1735.14			33.75	1732.79	29.45	1728.90	22.80	1689.98	33.55	1724.60		
18-Feb-97	42.60	1770.86					34.35	1735.19			33.70	1732.84	29.40	1728.95	22.90	1689.88	33.40	1724.75		
10-Mar-97	42.60	1770.86					34.35	1735.19			34.00	1732.54	29.35	1729.00	23.00	1689.78	33.30	1724.85		
09-Apr-97	42.45	1771.01					34.60	1734.94			34.00	1732.54	29.45	1728.90	23.10	1689.68	33.50	1724.65		
28-Apr-97	42.45	1771.01			32.28	1717.41	34.62	1734.92		1715.88	31.70	1734.84	29.54	1728.81	23.05	1689.73	33.59	1724.62		
18-Jun-97					32.80	1716.89	34.75	1734.79	22.40	1715.88			29.68	1728.67	23.49	1689.29	33.99	1724.56		
Aug-97	42.05	1771.41					34.45	1735.09			31.75	1734.51	29.20	1728.56	22.76	1690.02	33.53	1724.29		
15-Sep-97	41.93	1771.53			32.40	1717.29	34.55	1735.99	21.48	1716.80			29.01	1728.75	23.45	1689.33	33.10	1724.72	25.85	1714.31
20-Nov-97							33.90	1735.64	21.25	1717.03			28.65	1729.11	23.45	1689.33	33.04	1724.78	25.85	1714.31
02-Dec-97	45.75	1767.71					43.33	1726.21	21.03	1717.25			28.60	1729.16	22.85	1689.78	33.05	1724.77		
22-Jan-98	42.20	1771.26			32.00	1717.69	34.15	1735.39	21.23	1717.03			28.52	1729.24	23.00	1689.78	33.00	1724.82		
11-Feb-98	42.25	1771.21			32.29	1717.89	34.15	1735.39	21.30	1716.88			28.65	1729.11	22.70	1690.08	33.05	1724.77		
25-Mar-98	42.00	1771.46			31.80	1717.38	34.22	1735.32	21.60	1716.68			29.00	1728.76	23.16	1689.62	33.05	1724.82		
27-Apr-98	42.00	1771.46			32.31	1717.38	34.22	1735.32	21.60	1716.73			28.60	1728.76	22.65	1690.13	33.72	1724.10		
14-Sep-98	42.23	1771.23			32.60	1717.09	35.27	1734.27	21.55	1716.73			29.10	1728.16	22.65	1690.63	33.41	1724.41	26.00	1714.16
15-Dec-98	42.68	1770.78			32.40	1717.09	34.87	1734.67	20.44	1717.84			29.00	1730.66	21.70	1691.08	33.35	1726.58		
04-Feb-99	42.90	1772.64			32.80	1716.38	34.70	1736.22	20.81	1718.97			29.00	1730.47	21.70	1691.08	33.35	1726.58		
03-May-99	43.26	1772.28			33.37	1717.61	34.53	1736.29	21.74	1718.74			29.26	1730.21	21.87	1690.91	33.33	1726.60		

**KERR-McGEE CHEMICAL LLC
HENDERSON, NEVADA FACILITY
GROUNDWATER ELEVATIONS**

TOC-->	M-31 1789.63 DTW	ELEV	M-36 1759.82 DTW	ELEV	M-37 1761.06 DTW	ELEV	M-38 1759.73 DTW	ELEV	M-39 1761.13 DTW	ELEV	M-47 1716.51 DTW	ELEV	M-49 1718.78 DTW	ELEV	M-53 1753.00 DTW	ELEV	M-54 1750.59 DTW	ELEV	M-55 1750.88 DTW	ELEV
08-Jan-97			32.20	1725.74					30.60	1728.71	21.20	1695.31								
18-Feb-97			32.00	1725.94					30.50	1728.81	21.00	1695.51								
10-Mar-97			32.20	1725.74					30.50	1728.81	21.35	1695.16								
09-Apr-97			32.30	1725.64					30.70	1728.61	21.40	1695.11								
28-Apr-97	39.53	1748.86	32.35	1725.59	31.95	1727.33	31.08	1726.80	30.68	1728.63	21.41	1695.10	21.04	1697.74	31.10	1720.46	28.55	1720.38	31.15	1718.20
18-Jun-97			31.20	1726.74	31.93	1727.35	31.15	1726.73	31.40	1727.91					30.83	1720.73	28.35	1720.58	31.90	1717.45
Aug-97			31.63	1726.31	31.93	1727.35			30.00	1729.31										
15-Sep-97			31.49	1726.45	31.77	1727.51	30.90	1727.04	29.94	1729.37	21.11	1695.40	20.50	1698.28	30.10	1721.46	28.50	1720.43	31.15	1718.20
20-Nov-97	38.95	1749.11	31.25	1726.69	31.20	1728.08	30.75	1727.19	29.55	1729.76	21.15	1695.36	21.58	1697.20	30.04	1721.52	27.50	1721.43	31.23	1718.12
02-Dec-97			31.18	1726.76	31.30	1727.98	31.00	1726.94	29.47	1729.84	21.33	1695.18	21.00	1697.78	30.20	1721.36	27.91	1721.02	30.65	1718.70
22-Jan-98	38.80	1749.26	31.12	1726.82	31.22	1728.06	30.73	1727.21	29.65	1729.66	21.33	1695.18	21.05	1697.73	30.20	1721.36	27.26	1721.67	30.65	1718.35
11-Feb-98	39.13	1748.93	31.20	1726.74	31.37	1727.91	30.70	1727.24	29.44	1729.87	21.42	1695.09	20.70	1698.08	30.75	1720.81	28.10	1720.83	31.00	1718.67
25-Mar-98	38.85	1749.21	31.20	1726.74	31.20	1728.08	30.74	1727.24	29.65	1729.66	21.05	1695.46	20.83	1697.95	30.84	1720.72	28.24	1720.69	30.33	1719.02
27-Apr-98	39.10	1749.29	31.31	1726.63	31.41	1728.07	30.74	1727.20	30.06	1729.25	20.90	1695.61	20.73	1698.05	31.00	1720.56	28.46	1720.47	31.65	1717.70
14-Sep-98	39.65	1748.54	31.82	1726.12	32.04	1727.24	31.21	1726.73	30.63	1728.68	21.02	1695.49	20.50	1698.28	31.00	1720.76	28.40	1720.53	31.40	1717.95
15-Dec-98	39.52	1748.87	31.67	1726.27	31.42	1727.86	31.05	1726.99	29.28	1730.03	20.65	1695.86			30.80	1720.20	28.55	1722.04	31.50	1719.38
4-Feb-99	39.50	1750.13	31.47	1728.35	31.43	1729.63	30.94	1728.79	30.02	1731.11	P&A		P&A		29.80	1723.20	28.55	1722.04	31.50	1719.38
3-May-99	39.28	1750.35	31.48	1728.34	31.43	1729.63	30.90	1728.63	30.59	1730.54					30.42	1722.58	29.32	1721.27	32.51	1718.37

**KERR-McGEE CHEMICAL LLC
HENDERSON, NEVADA FACILITY
GROUNDWATER ELEVATIONS**

TOC-->	M-56 1750.84 DTW	ELEV	M-57 1753.83 DTW	ELEV	M-58 1751.26 DTW	ELEV	M-59 1744.61 DTW	ELEV	M-60 1750.94 DTW	ELEV	M-61 1746.84 DTW	ELEV	M-62 1753.77 DTW	ELEV	M-63 1752.44 DTW	ELEV	M-64 1749.76 DTW	ELEV	M-65 1753.51 DTW	ELEV
08-Jan-97																				
18-Feb-97	30.70	1718.90	31.38	1720.91	29.85	1719.40	22.77	1720.24	29.33	1720.80	24.15	1721.40	29.85	1723.07	28.00	1722.59	30.15	1719.61	32.60	1720.28
10-Mar-97	30.63	1718.97	31.28	1721.01	29.90	1719.35	22.80	1720.21	29.35	1720.78	24.20	1721.35	29.45	1723.47	27.97	1722.62	30.40	1719.36	32.70	1720.18
08-Apr-97																				
28-Apr-97																				
18-Jun-97																				
Aug-97																				
15-Sep-97	30.35	1716.25	31.40	1720.89	29.05	1720.20	21.80	1721.21	28.80	1721.33	22.85	1722.70	30.28	1722.64	28.07	1722.52	30.35	1719.41	32.25	1720.63
20-Nov-97	28.80	1717.80	30.60	1721.69	29.08	1720.17	21.85	1721.16	28.64	1721.49	23.50	1722.05	29.00	1723.92	27.30	1723.29	29.70	1720.06	32.07	1720.81
02-Dec-97	30.00	1716.60	30.54	1721.73	28.34	1720.91	21.25	1721.76	28.30	1721.83	22.45	1723.10	30.08	1722.84	27.40	1723.19	29.80	1719.96	31.95	1720.93
22-Jan-98	29.85	1716.75	30.95	1721.34	28.90	1720.35	21.80	1721.21	28.37	1721.76	22.90	1722.65	29.13	1723.79	27.32	1723.27	28.45	1721.31	32.10	1720.78
11-Feb-98	30.00	1716.60	31.00	1721.29	29.00	1720.25	21.85	1721.16	28.55	1721.58	23.10	1722.42	30.50	1724.42	27.70	1722.89	28.70	1721.06	32.15	1720.73
25-Mar-98	30.14	1719.46	31.08	1721.21	28.30	1719.85	22.12	1720.89	28.85	1721.28	23.49	1722.06	28.55	1724.37	28.16	1722.43	29.47	1720.16	32.35	1720.53
27-Apr-98	30.75	1718.85	31.20	1721.09	29.40	1719.85	22.00	1721.01	29.00	1721.13	23.22	1722.33	30.80	1722.02	28.66	1721.93	30.40	1719.96	32.69	1720.19
14-Sep-98	30.68	1718.92	30.80	1721.49	29.52	1719.73	22.28	1720.73	29.05	1721.08	23.55	1722.00	30.60	1722.32	28.15	1722.44	30.15	1719.61	32.60	1720.28
15-Dec-98	30.40	1720.44	29.35	1724.48	28.65	1720.60	21.15	1723.46	28.40	1722.54	22.40	1724.44	28.58	1725.19	27.80	1724.64	30.10	1719.66	32.35	1721.56
04-Feb-99	31.05	1719.79	30.28	1723.55	29.23	1720.02	22.13	1722.48	30.44	1720.50	23.70	1723.14	29.10	1724.67	28.23	1724.21	30.55	1719.21	32.64	1721.27

**KERR-MCGEE CHEMICAL LLC
HENDERSON, NEVADA FACILITY
GROUNDWATER ELEVATIONS**

TOC-->	M-89 1766.20		M-90 1738.95		M-91 1739.58		M-5A 1749.90		M-6A 1729.15		M-7A 1729.81		M-10 1836.21		M-13 1814.90	
	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
08-Jan-97	33.00	1732.25					39.65	1710.25	40.40	1688.75	39.00	1690.81	49.30	1785.46	46.60	1767.63
18-Feb-97	32.90	1732.35					38.80	1711.10	40.50	1688.65	39.00	1690.81	48.90	1785.86	46.60	1767.63
10-Mar-97	32.95	1732.30					39.60	1710.30	40.40	1688.75			48.85	1785.91	46.80	1767.43
09-Apr-97	33.15	1732.10					39.65	1710.25	40.40	1688.75			47.70	1787.06	46.75	1767.48
28-Apr-97	33.15	1732.10		1714.56	25.40	1717.98	39.67	1710.23	40.40	1688.75			47.72	1787.04	46.71	1767.52
18-Jun-97				1716.21	24.00	1719.38							48.10	1786.66		
Aug-97	33.02	1732.23		1714.05			39.75	1710.15	40.50	1688.65	37.95	1691.86	48.55	1786.21	45.61	1769.60
15-Sep-97	32.83	1732.42		1714.66			39.76	1710.14	40.45	1688.70	37.15	1692.66	48.40	1786.36	45.40	1769.81
20-Nov-97				1715.92	23.70	1715.88							48.37	1786.39	42.10	1773.11
02-Dec-97	32.36	1732.89		1717.42	22.47	1717.11							48.25	1786.51	46.30	1768.91
22-Jan-98	32.56	1732.69		1715.78	23.60	1715.98							48.63	1786.13	46.30	1768.91
11-Feb-98	32.31	1732.94											48.25	1786.51	46.42	1767.81
25-Mar-98	32.45	1732.80		1714.95	24.81	1714.77	46.79	1703.11	47.38	1681.77	40.47	1689.34	42.84	1791.92	46.18	1768.05
27-Apr-98	32.59	1732.66			P&A								49.05	1785.71	46.37	1767.66
14-Sep-98	33.43	1731.82											48.68	1786.08	46.22	1768.68
15-Dec-98	33.13	1732.12											50.29	1785.92	46.22	1768.68
4-Feb-99	32.95	1733.25											49.92	1786.29	46.89	1768.01
3-May-99	32.84	1733.36					37.69	1712.21	38.71	1690.44	33.73	1696.08				

KERR-McGEE CHEMICAL LLC
 HENDERSON, NEVADA FACILITY
 GROUNDWATER ELEVATIONS

TOC-->	MP88 1731.91 DTW ELEV	MP89 1730.74 DTW ELEV	MP100 1730.93 DTW ELEV	MP101 1730.81 DTW ELEV	MP102 1740.24 DTW ELEV	PC-37 1707.72 DTW ELEV	PC-34 1704.43 DTW ELEV	PC-71 1698.74 DTW ELEV	PC-72 1699.43 DTW ELEV	PC-73 1699.5 DTW ELEV
04-Feb-99	25.62 1706.29	25.64 1705.10	22.80 1708.13	22.80 1708.01	30.12 1710.12	23.06 1684.66	12.16 1692.27	23.32 1675.42	31.00 1668.43	36.10 1663.40
03-May-99	27.00 1704.91	26.29 1704.45	24.85 1706.08	23.71 1707.10	31.06 1709.18	22.90 1684.82	12.02 1692.41	23.25 1675.49	30.89 1668.54	35.97 1663.53

**KERR-MCGEE CHEMICAL LLC
HENDERSON, NEVADA FACILITY
GROUNDWATER ELEVATIONS**

TOC-->	I-A 1753.24		I-B 1752.67		I-C 1752.78		I-D 1752.67		I-E 1752.36		I-F 1749.70		I-G 1752.50		I-H 1753.21	
	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
08-Jan-97	33.50	1717.56	44.05	1706.64	43.80	1706.64	43.85	1706.69	35.30	1714.92	41.65	1705.93	40.75	1709.67	41.70	1709.37
18-Feb-97	42.00	1709.06	44.00	1706.69	43.90	1706.54	43.85	1706.69	41.15	1709.07	41.70	1705.88	40.70	1709.72	36.20	1714.87
10-Mar-97	33.00	1718.06	42.60	1708.09	43.90	1706.54	43.85	1706.69	35.70	1714.52	41.60	1705.98	40.75	1709.67	35.65	1715.42
09-Apr-97	40.00	1711.06	42.65	1708.04	43.85	1706.59	43.80	1706.74	34.60	1715.62	41.60	1705.67	40.75	1709.67	36.00	1715.07
28-Apr-97	34.25	1716.81	42.70	1707.99	43.90	1706.54	43.87	1706.67	33.90	1716.42	41.15	1706.43	40.76	1709.66	42.00	1709.07
18-Jun-97	40.00	1711.06	43.40	1707.29	31.85	1718.59	43.00	1707.54	35.70	1714.52	40.60	1706.98	40.70	1709.72	39.80	1711.27
Aug-97																
15-Sep-97	35.94	1715.12	43.15	1707.54	43.20	1707.24	34.60	1715.94			41.91	1705.67				
20-Nov-97	40.00	1711.06	43.00	1707.69	30.05	1720.39	44.05	1706.49	34.35	1715.87	43.00	1704.58	40.70	1709.72	36.40	1714.67
02-Dec-97	40.00	1711.06	43.00	1707.69	30.05	1720.39	44.05	1706.49	34.35	1715.87	43.00	1704.58	40.70	1709.72	36.40	1714.67
11-Jan-98	34.00	1717.06	35.00	1715.69	34.00	1716.44	42.80	1707.74	37.00	1713.22	33.30	1714.28	39.90	1710.52	37.70	1713.37
25-Mar-98	37.65	1713.41	39.20	1711.49	42.20	1706.24	44.25	1706.29	37.50	1712.72	38.25	1709.33	39.44	1710.99	31.54	1719.53
14-Sep-98	34.80	1716.26	43.00	1707.69	44.00	1706.44	44.70	1705.84	34.30	1715.92	40.85	1706.73	39.70	1710.72	34.20	1716.87
27-Apr-98	37.89	1713.17	43.18	1707.51	42.73	1707.71	32.15	1718.39	33.22	1717.00	40.74	1706.94	35.87	1714.55	34.85	1716.22
14-Sep-98	38.73	1712.33	42.73	1707.96	41.13	1709.31	44.41	1706.13	37.15	1713.07	40.70	1706.68	39.84	1710.58	36.02	1715.05
15-Dec-98	40.70	1710.36	42.86	1707.83	41.10	1709.34	44.50	1706.04	35.63	1714.59	40.98	1706.60	39.00	1711.42	40.58	1710.49
4-Feb-99	31.82	1721.42	43.21	1709.46	43.94	1708.84	44.64	1708.03	34.15	1718.21	41.32	1708.98	39.95	1712.55	31.00	1722.21
3-May-99	38.42	1714.82	42.10	1710.57	43.70	1709.08	43.87	1708.80	39.65	1712.71	40.56	1709.14	39.46	1713.04	32.67	1720.54

KERR-McGEE CHEMICAL LLC
 HENDERSON, NEVADA FACILITY
 GROUNDWATER ELEVATIONS

TOC-->	IR DTW	IS DTW	IT DTW	IU DTW	IY DTW
03-May-99	1751.35 ELEV 31.22 1720.13	1747.57 ELEV 43.12 1704.45	1751.66 ELEV 40.00 1711.66	1752.54 ELEV 39.20 1713.34	1752.13 ELEV 40.19 1711.94