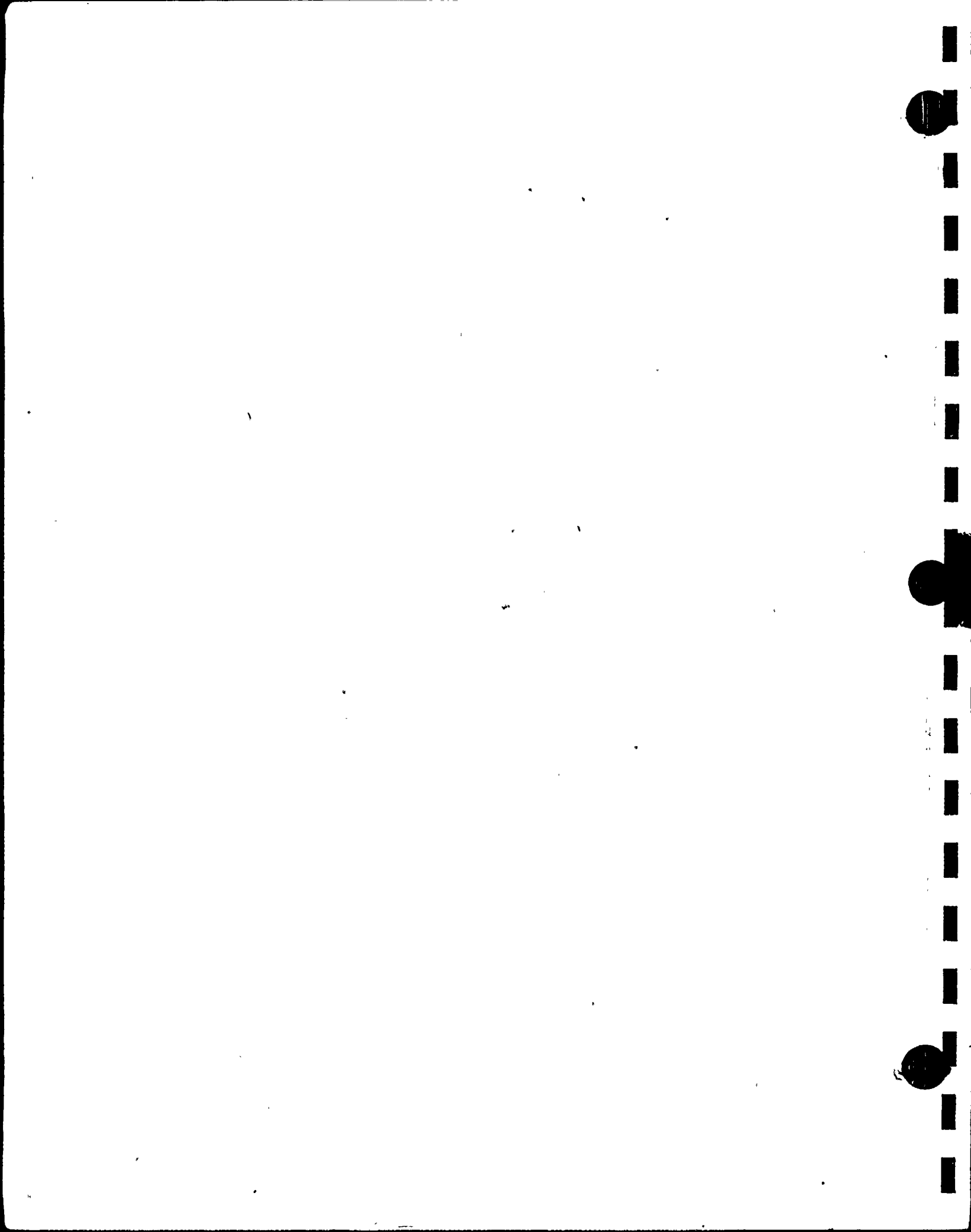


SUMMARY REPORT  
JULY, 1981  
ANNUAL MEETING SFWMD/FPL  
GROUND WATER MONITORING PROGRAM  
TURKEY POINT, FLORIDA  
FLORIDA POWER & LIGHT COMPANY

JOB NO.: 04598-047-26  
DATE: JULY 27, 1981

BOCA RATON, FLORIDA

8109040105 810826  
PDR ADDCK 05000250  
R PDR



## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION.....	1
2.0 DATA REVIEW.....	3
3.0 SUMMARY.....	11

### APPENDIX A

#### TIME HISTORY DATA

### APPENDIX B

#### CONDUCTIVITY - CHLORINITY CALIBRATIONS

### APPENDIX C

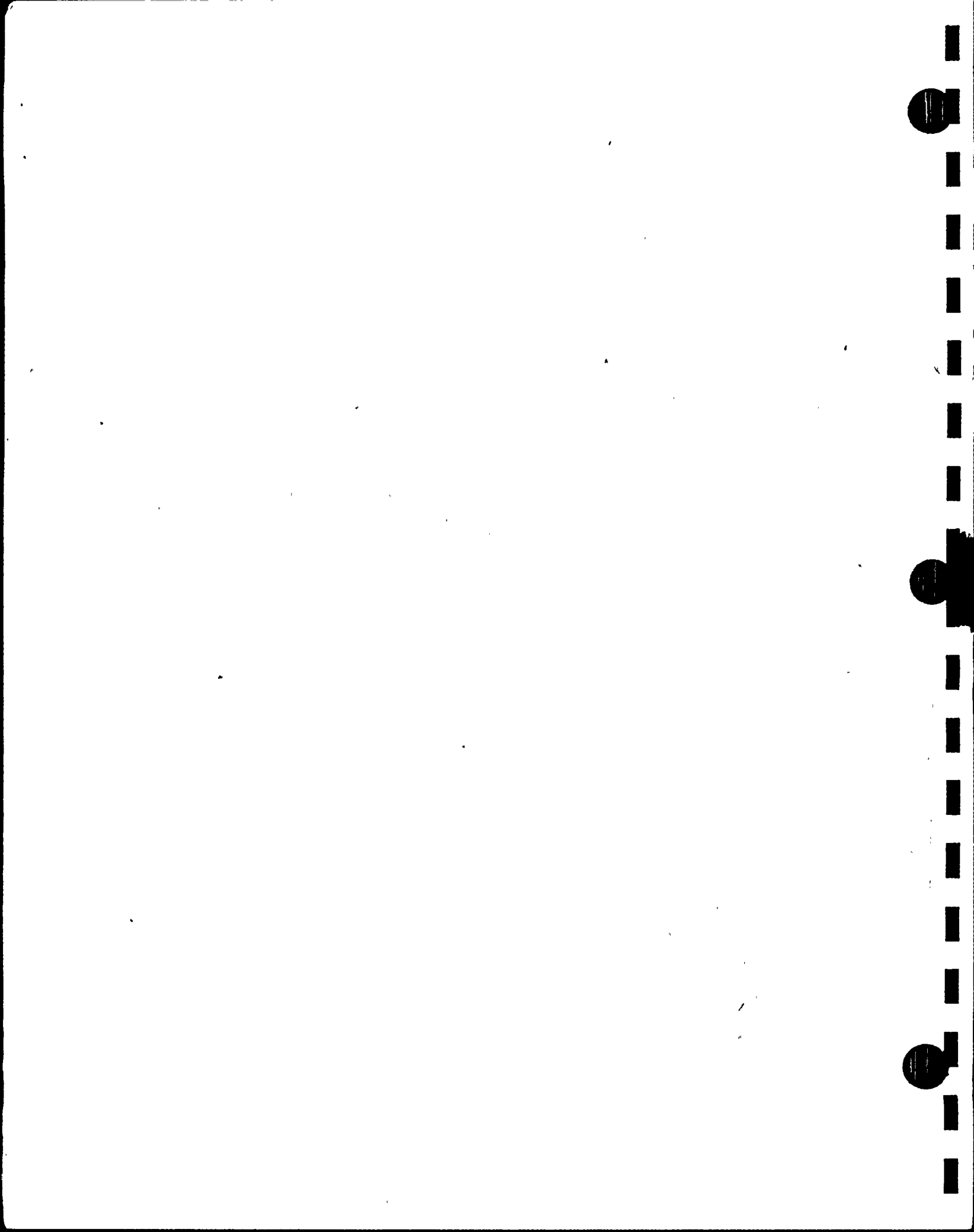
#### INTERCEPTOR DITCH OPERATION

### APPENDIX D

#### VARIATIONS FROM HISTORICAL ENVELOPE CURVES

### APPENDIX E

#### MONITORING PROGRAMS





## LIST OF FIGURES

<u>Figures</u>	<u>Title</u>
1	Well Locations
2	Plot Plan
3	Yearly Rainfall, Turkey Point, Florida
4	Time History, Rainfall, Water Levels, and Ground Water Temperature and Chlorinity
5	Extremes of Temperature For July 80 - June 81 Well L-2
6	Extremes of Temperature For July 80 - June 81 Well L-3
7	Extremes of Temperature For July 80 - June 81 Well L-5
8	Extremes of Temperature For July 80 - June 81 Well G-6
9	Extremes of Temperature For July 80 - June 81 Well G-14
10	Extremes of Temperature For July 80 - June 81 Well G-27
11	Extremes of Temperature For July 80 - June 81 Well G-28
12	Extremes of Temperature For July 80 - June 81 Well G-35
13	Extremes of Chlorinity For July 80 - June 81 Well L-2
14	Extremes of Chlorinity For July 80 - June 81 Well L-3
15	Extremes of Chlorinity For July 80 - June 81 Well L-5



LIST OF FIGURES (Cont'd)

<u>Figures</u>	<u>Title</u>
16	Extremes of Chlorinity For July 80 - June 81 Well G-6
17	Extremes of Chlorinity For July 80 - June 81 Well G-14
18	Extremes of Chlorinity For July 80 - June 81 Well G-27
19	Extremes of Chlorinity For July 80 - June 81 Well G-28
20	Extremes of Chlorinity For July 80 - June 81 Well G-35
APPENDIX A	Time-History Plots
APPENDIX B	Conductivity-Chlorinity Relationships G-Series Wells
APPENDIX C	Time History: Interceptor Ditch Operation
APPENDIX D	Excursions From Temperature Envelopes For July 80 - June 81.
	Excursions From Chlorinity Envelopes For July 80 - June 81.



SUMMARY REPORT  
JULY 1981  
ANNUAL MEETING SFWMD/FPL  
GROUND WATER MONITORING PROGRAM  
TURKEY POINT, FLORIDA  
FLORIDA POWER & LIGHT COMPANY

1.0 INTRODUCTION

This report, the second in the annual format discussed at our meeting in July 1979, presents the results of the Ground Water Monitoring and the Interceptor Ditch Programs required in compliance with the February 2, 1972 legal agreement between Florida Power & Light (FP&L), and the South Florida Water Management District (SFWMD). Specifically, this report addresses the data collected between July 1980 and June 1981 in relative perspective with historical data which are available from April 1972.

The annual report series was preceded by a series of seven semi-annual reports, issued alternately in January and July, beginning in July 1976. The semi-annual report series was preceded by 17 status reports which were issued quarterly (January, April, July and October).

In addition to the quarterly and more recent semi-annual reports a summary report was submitted in March 1976 dealing with the G-Series wells used in the monitoring program. This summary report dealt with the initial four years of monitoring data.



The Ground Water Monitoring Program consists of periodic monitoring of ground water level, temperature and conductivity in 19 wells. The locations of these wells is shown on Figures 1 and 2. A description of the monitoring program, technique, logistics, and equipment is contained in Appendix E.





## 2.0 DATA REVIEW

### RAINFALL

The rainfall pattern for the past 12 month monitoring period exhibits a continuation of the departure from typical patterns exhibited in past years as noted in the 1980 Annual Report. This departure is marked by the absence of a well defined strong wet season and most notably by the extreme dry period extending from January to April, 1981 (see Figure 3). Despite these variances, the total precipitation recorded during the 1980-1981 monitoring period (18.06 inches at Structures 20 and 27.90 inches at Structure 20-F) exhibits a cumulative total below that recorded for the 1979-1980 monitoring period (31.55 inches at Structure 20 and 26.39 inches at Structure 20-F). These station totals reflect a shift in the distribution of rainfall over the system during the past 12 month monitoring period.

The peak rainfall for the wet season occurred in September, 1980 (4.24 inches at Structure 20) coinciding with the conventional wet season peak. Typically October has marked the start of the conventional dry season. However, it should be noted that the highest monthly rainfall recorded for the past 12 month monitoring period occurred during the month of November 1980 (6.65 inches at Structures 20-F).

The months of January, February, March, and April 1981, typically dry months, exhibited the lowest levels of rainfall recorded since the monitoring began in 1973. The peak of this



recent four-month period was in March 1981 (1.59 inches at Structure 20-F).. The peak for this same four-month period during the 1979-1980 monitoring period occurred during April 1980, (3.76 inches at Structure 20) and was at that time referred to as a relatively low level. The month of May 1981 also exhibited a level or rainfall (3.82 inches at Structure 20) that barely exceeded the level recorded during the dry season month of December 1980 (3.37 inches at Structure 20-F). These variances from the seasonal pattern have become common in recent monitoring periods and are taken into consideration when evaluating the cooling canal system.

#### SURFACE WATER LEVELS

Water levels in the Levee 31 Borrow Canal and Canal 32 along pumping Line C displayed an increased seasonal fluctuation during the past 12-month period over that recorded during the previous 12-month period. This increased seasonal pattern can be directly attributed in part to the residual effects of the sustained sporadic rainfall that occurred throughout the 1979-1980 dry season and also to the extreme dry period between January and April 1981. The maximum difference in water levels recorded during the 1980-1981 monitoring period was 1.47 feet in the Levee 31 Borrow Canal as opposed to a maximum difference of 1.1 feet recorded during the 1979-1980 monitoring period. It should be noted that the highest levels recorded occurred during the month of November 1980, coinciding with the late heavy rainfall recorded for that month.



The observed water levels began a slow downward trend in December 1980, rising slightly in February 1981, and resuming a downward trend in March 1981 through May 1981 at which time the lowest levels were recorded in the Levee 31 Borrow Canal for this period. During the period between July and December 1981, the canals maintained an average difference of 0.57 feet. During the dry months, January through March 1981, the canals maintained an average difference of 0.26 feet. In April 1981, the level of the Levee 31 Borrow Canal fell below that of Canal 32 until the end of May 1981. This occurrence coincides with the heaviest pumping of the Interceptor Ditch for the 1980-1981 monitoring period.

The water level in the Levee 31 Borrow Canal rose 0.70 feet in May 1981, keeping with historical patterns set during previous monitoring periods. Due to the delayed onset of the wet season, however, the level of the Levee 31 Borrow Canal dropped briefly below that of Canal 32 in May 1981. The difference between the water levels in the two canals averaged 0.16 feet during the month of June 1981.

#### GROUND WATER LEVELS

Ground water levels over the past 12-month monitoring period have generally exhibited a slight downward trend as influenced by the drought period of January-April 1981 (see Time History Data, Appendix A). Most of the wells throughout the system exhibited maximum water levels during the July, August 1980 period in response to the heavy rainfall during



June 1980. The high range is represented by the levels for July 1980 recorded in wells G-14 and G-27 in which ground water elevations were 2.52 and 1.41 feet MSL, respectively. It should be noted that these elevations are higher than those recorded in the past. It should also be noted that well L-3 displayed the highest water level for the historical record of that well in August 1980 (2.41 feet MSL).

The typical low water levels for the 12-month monitoring period were recorded during the months of May and June 1981. The range of these low levels is represented by the ground water elevations recorded in wells G-27 and G-14 during the month of June 1981. These wells displayed water level elevations of 1.29 and 0.43 feet MSL, respectively. It should also be noted that these wells represent the maximum and minimum ground water fluctuation for the monitoring system during the 1980-1981 period; 2.09 feet in well G-14, located along Tallahassee Road and 0.41 feet in well G-27, located just west of the Levee 31 Borrow Canal.

Historically, the maximum range throughout the system has been two feet. This has been exceeded along Tallahassee Road. The mean fluctuation in the wells along the Levee 31 Borrow Canal was 1.31 feet.

#### GROUND WATER TEMPERATURES

The range of ground water temperatures for the past 12 months is represented on Figures 5 through 12. These figures show the extremes of temperatures for the period July 1980





through June 1981 as compared to the historical envelope of temperatures for indicator wells L-2, L-3, L-5, G-6, G-14, G-27, G-28 and G-35.

In general, the L-Series wells displayed higher than normal water temperatures generally at depths above -25 feet MSL. For example, well L-2 displayed temperatures  $1.0^{\circ}\text{C}$  above the historical envelope at depths above -15 feet MSL. These excursions occurred during the October, November 1980 period. Ground water temperatures at the shallower depths reflect the temperatures in the Levee 31E Borrow Canal. The L-Series also displayed higher than normal temperatures in the depths below -30 feet MSL during the months of May, June 1981. Well L-2 is again the extreme example with the June 1981 excursion displaying a temperature  $1.8^{\circ}\text{C}$  above the historical envelope.

Ground water temperatures in the G-Series wells were generally within the historical range, however the lowest temperatures in the history of the monitoring program for the G-Series wells were recorded during the past 12-month monitoring period. These low temperatures occurred during the March, April 1981 period, generally in the depths above -40 feet MSL. An example is well G-35, displaying temperatures  $0.7^{\circ}\text{C}$  below the historical envelopes for these months. Well G-21 displayed the most radical departure with ground water temperatures,  $2.4^{\circ}\text{C}$  below the historical range in the shallower depths during the month of April 1981. The G-Series indicator wells



also showed a slight increase in temperatures during the months of August, September, October, and November 1980 in the shallower depths above -25 feet MSL. For example, well G-14 showed a ground water temperature  $1.4^{\circ}\text{C}$  above the historical envelope at -15 feet MSL in November 1980. Again, well G-21 showed the most radical departure with a temperature  $3.6^{\circ}\text{C}$  above the historical envelope during August 1980.

Temperature time-history data (Appendix A) reveals decreases in temperature for most ID-, L-, and X-Series wells in the lower elevations. These decreases occurred as a slight downward trend throughout the past 12-month monitoring period. The upper levels in the ID-, L-, and X-Series wells displayed seasonal patterns in line with those recorded in past years. However, both historical highs and lows were recorded in the upper levels of the ID-Series wells during the past 12-month monitoring period. The historical low temperatures occurred during the January, February 1981 period with well ID-B displaying the lowest of these temperatures,  $10.5^{\circ}\text{C}$  below the historical envelope at -15 feet MSL. The historical high temperatures occurred during the month of May 1981 in wells ID-B and ID-C. Again, ID-B displayed the extreme temperature for the series by showing a ground water temperature  $1.3^{\circ}\text{C}$  above the historical envelope at -15 feet MSL.

Ground water temperatures in those wells located adjacent to the system displayed low values during the months December 1980 and January 1981. High temperatures were recorded in



these wells during March, April, May, and June 1981. These trends probably reflect the altered rainfall patterns for this past period in that the absence of the cooling effect of precipitation in early 1981 contributed to the higher temperatures recorded during this period. The G-Series wells do not appear to reflect the temperatures within the cooling canal system.

#### GROUND WATER CHLORINITIES

The range of ground water chlorinities for the past 12 months is represented on Figures 13 through 20. These figures show the chlorinity extremes for the period of July 1980 through June 1981 as compared to the historical envelope of chlorinities for indicator wells L-2, L-3, L-5, G-6, G-14, G-27, G-28, and G-35.

The L-Series wells showed chlorinities both above and below the historical range in early 1981. Well L-2 showed an increase chlorinity of 3.9 ppt in June 1981 at depths below -40 feet MSL. Smaller increases were also displayed in wells L-3 and L-5 at the lower elevations. A maximum excursion of 1.4 ppt was displayed at depth in well L-3 in April 1981. The L-Series wells displayed chlorinity levels below the historical envelope in elevations above -28 feet MSL. The excursions ranged from 5.8 ppt in well L-2 in May 1981 at -21.5 feet MSL to 2.2 ppt in well L-5 at -20 feet MSL in January 1981.

In the G-Series wells west of the cooling canal system, only well G-27 displayed any significant excursions from the



historical envelope. The excursions occurred during November 1980, January and March 1981 at elevations above -28 feet MSL. The maximum excursion occurred in January 1981 with a chlorinity value 7.8 ppt below the historical envelope at -22.0 feet MSL. Wells G-28 and G-35 exhibited chlorinity values below the historical envelope at elevations below -40 feet MSL. Well G-35 showed the most radical departure at the lower elevations, displaying an excursion of 2.8 ppt below the historical envelope in October 1980.

The chlorinity Time-History Data (Appendix A) generally shows increases in chlorinity in the ID-, L-, and X-Series wells. These increases are slight and are indicated as a slow upward trends in chlorinity recorded at all depths. The chlorinities in the G-Series wells remained relatively constant and for the most part were within the historical range. The L-Series well displayed historical peaks in chlorinity at the shallower elevations in May and June 1981.





### 3.0 SUMMARY

During the past 12-month monitoring period, the typical wet/dry season precipitation pattern usually observed in the South Florida region has not been observed in the Turkey Point area. A drier than normal wet season followed by an extreme drought condition extending into the typical wet season month of May has resulted in a below normal rainfall.

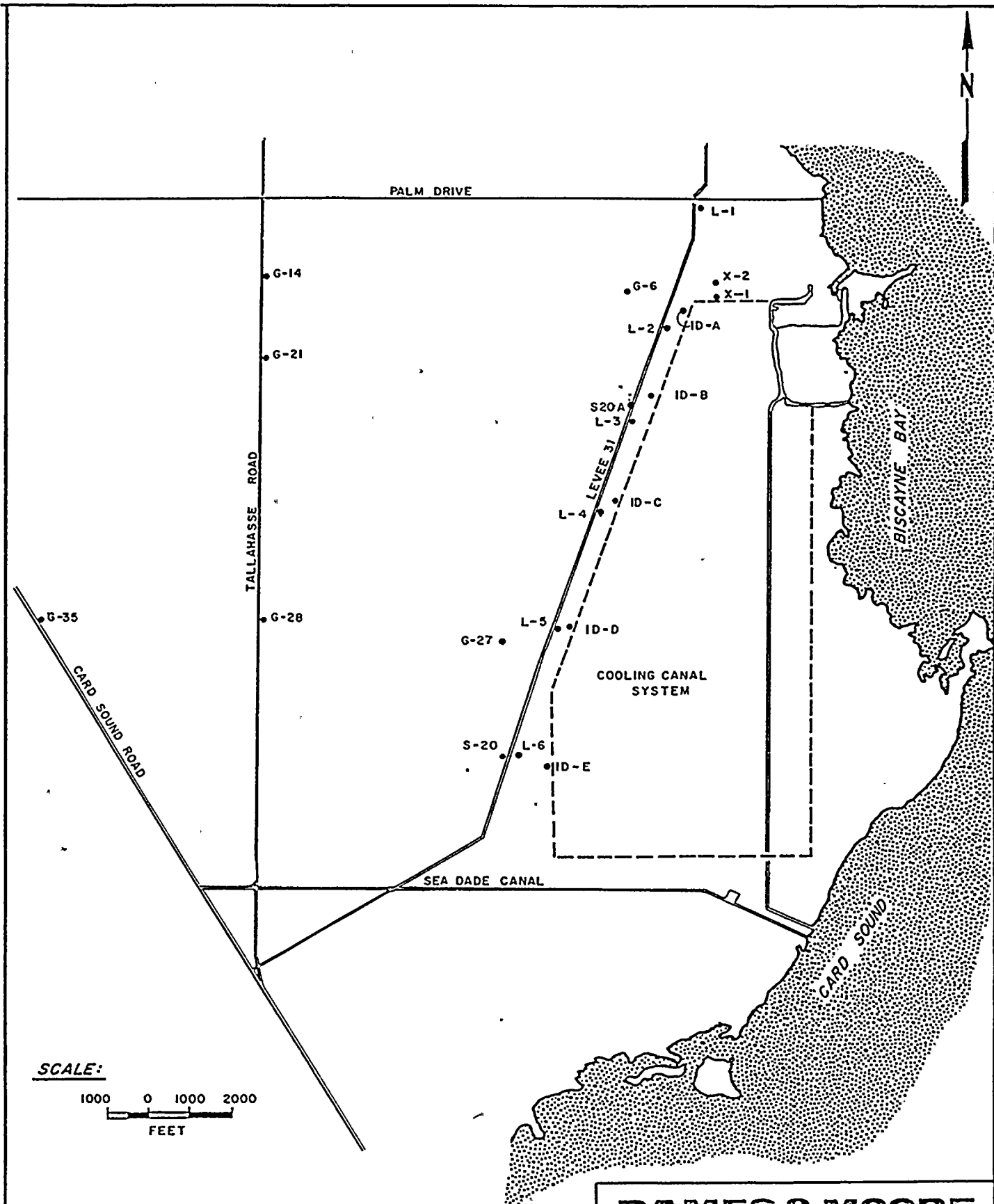
Temperatures and chlorinities in the G-Series wells to the west of the cooling canal system displayed patterns generally within the historical ranges. No short or long-term trends were observed, indicating that the cooling canal system has not had an influence on the ground water to the west.

In the L, ID-, and X-Series wells, temperatures and chlorinities appear to have risen in recent years. The 1980-1981 monitoring period shows a "stabilization" of the ground water temperatures in the L- and ID-Series wells as well as a slight decline in temperature in the L- and ID-Series wells as well as a slight decline in temperature in the two X-wells at the lower elevations. These trends as well as the historical chlorinity peaks recorded during the past 12-month period may be associated with the abnormal precipitation patterns recorded during the 1980-1981 monitoring period. The patterns have followed the trend of decreasing levels of rainfall during the wet season months necessitating a change in the pumping operations along the interceptor ditch in recent years. (A graphic record of Interceptor Ditch pumping patterns for the history of



the monitoring period is presented on the time-history plots in Appendix A).





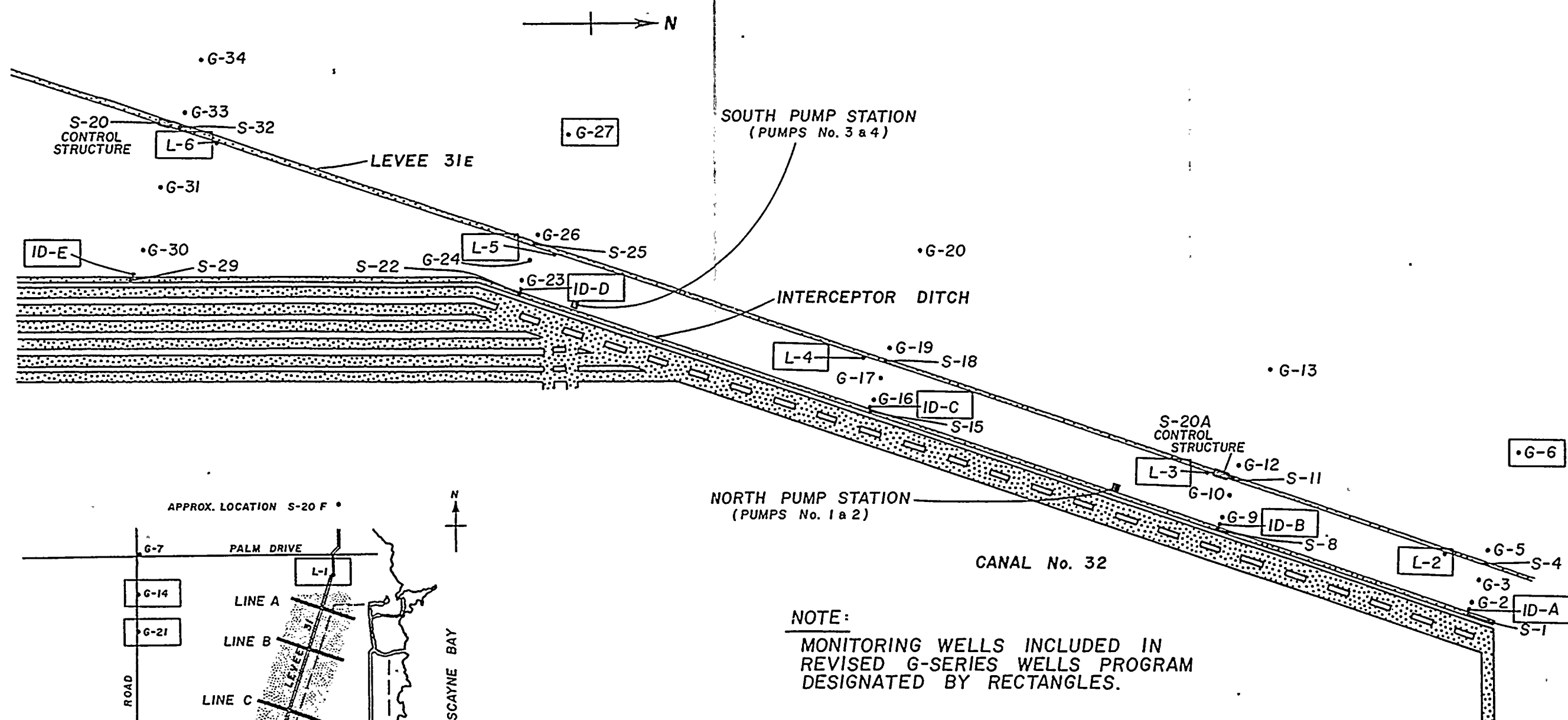
**DAMES & MOORE**

WELL LOCATIONS  
CURRENT MONITORING PROGRAM

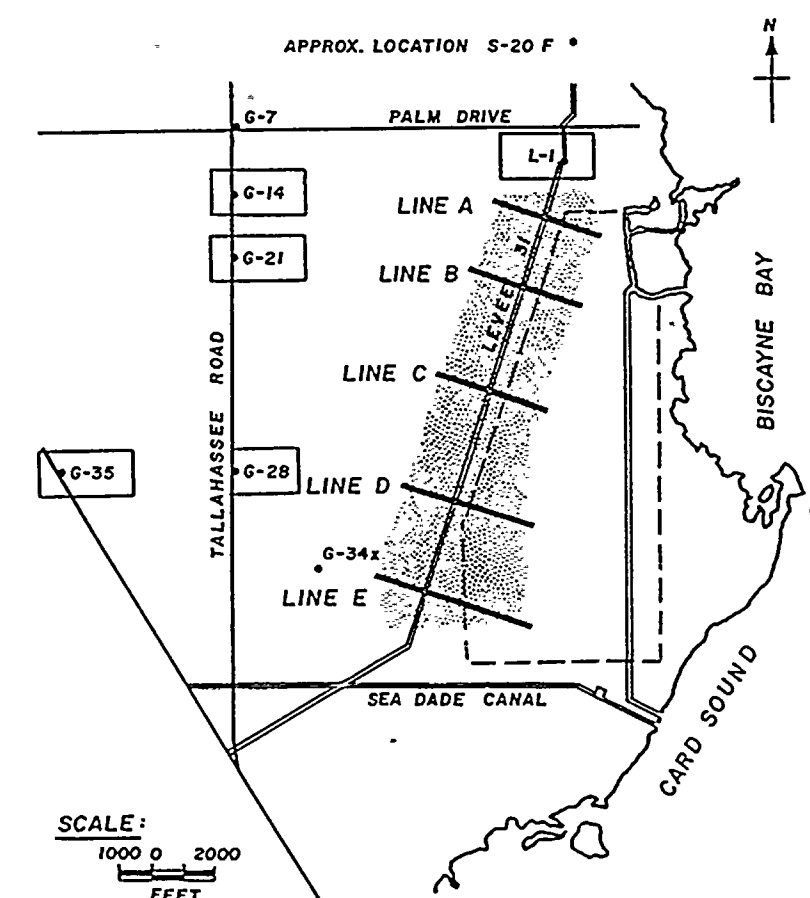
0459804726(7/80).

FIGURE 1





**NOTE:**  
MONITORING WELLS INCLUDED IN  
REVISED G-SERIES WELLS PROGRAM  
DESIGNATED BY RECTANGLES.



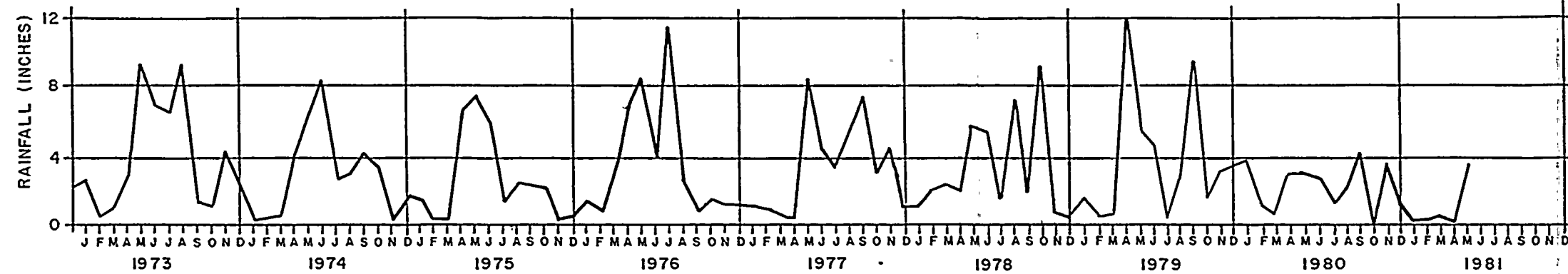
**SCALE:**  
1000 0 2000  
FEET

**SCALE**  
2000' 0 1000'  
FEET

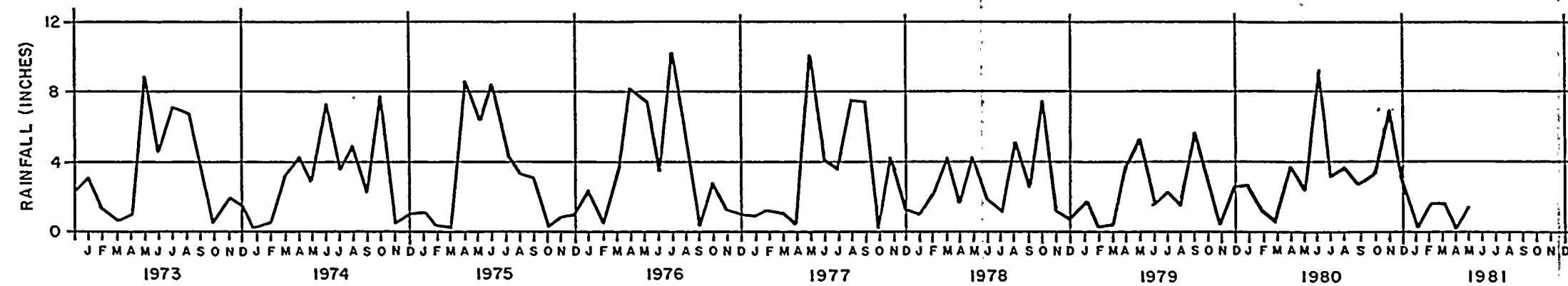
<b>DAMES &amp; MOORE</b>	
<b>PLOT PLAN</b>	
0459804726(1/79)	FIGURE 2







STRUCTURE 20



STRUCTURE 20F

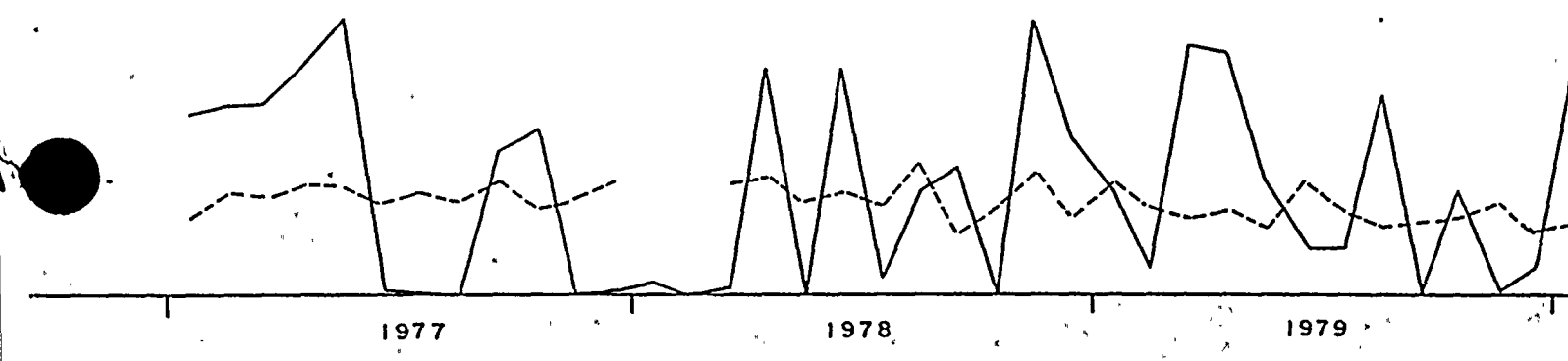
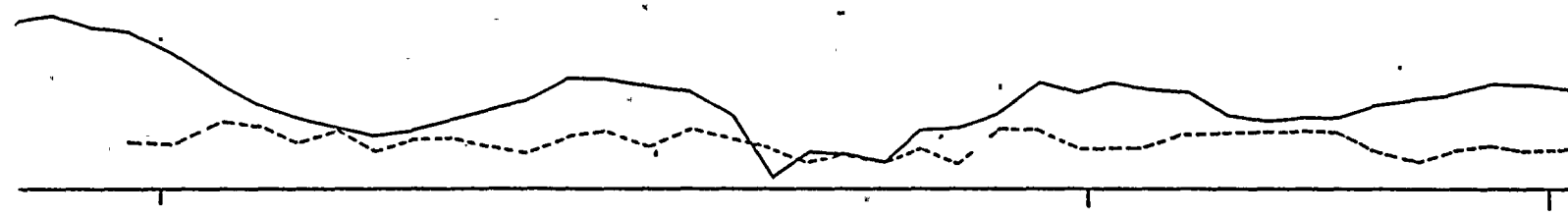
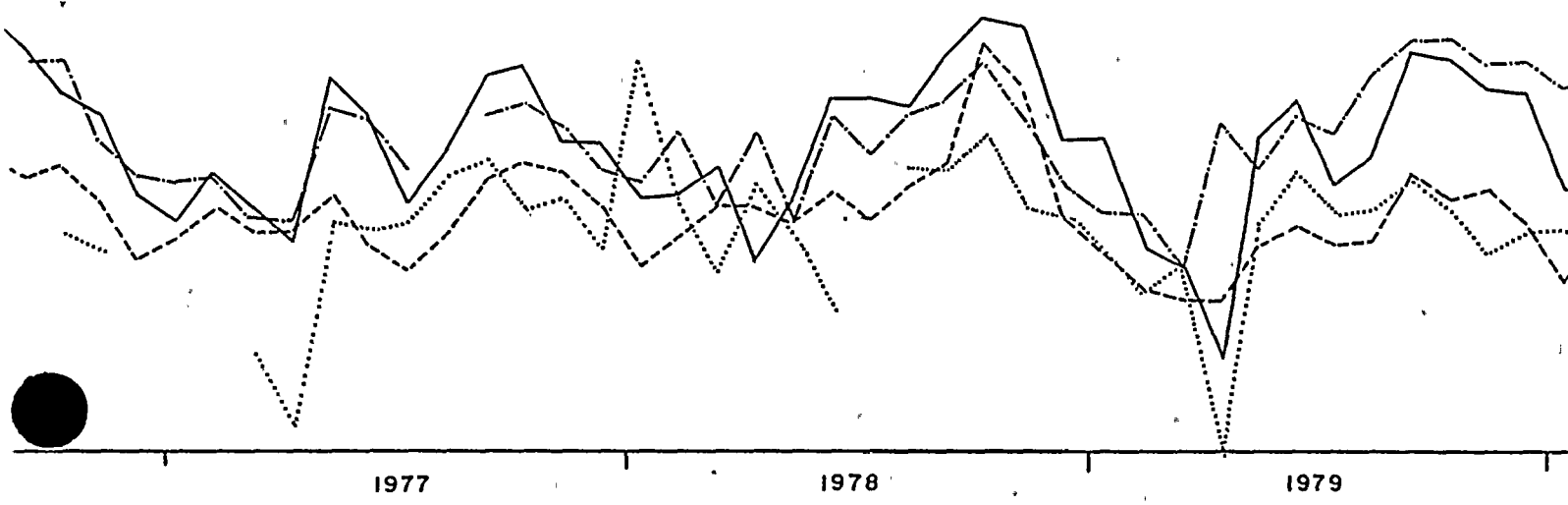
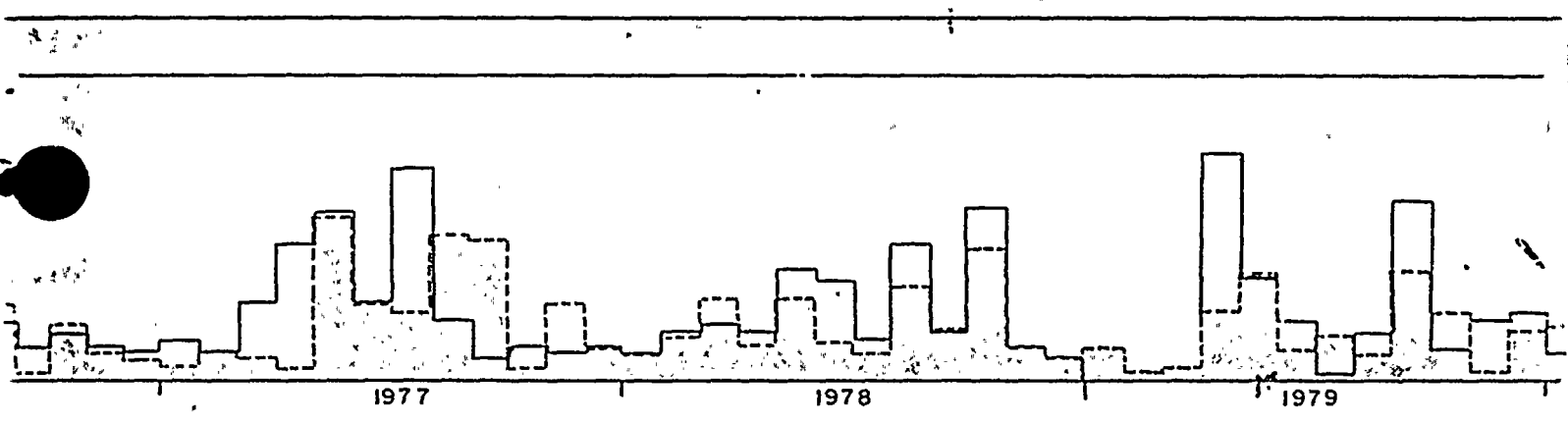
SOURCE: SOUTH FLORIDA WATER MANAGEMENT DISTRICT

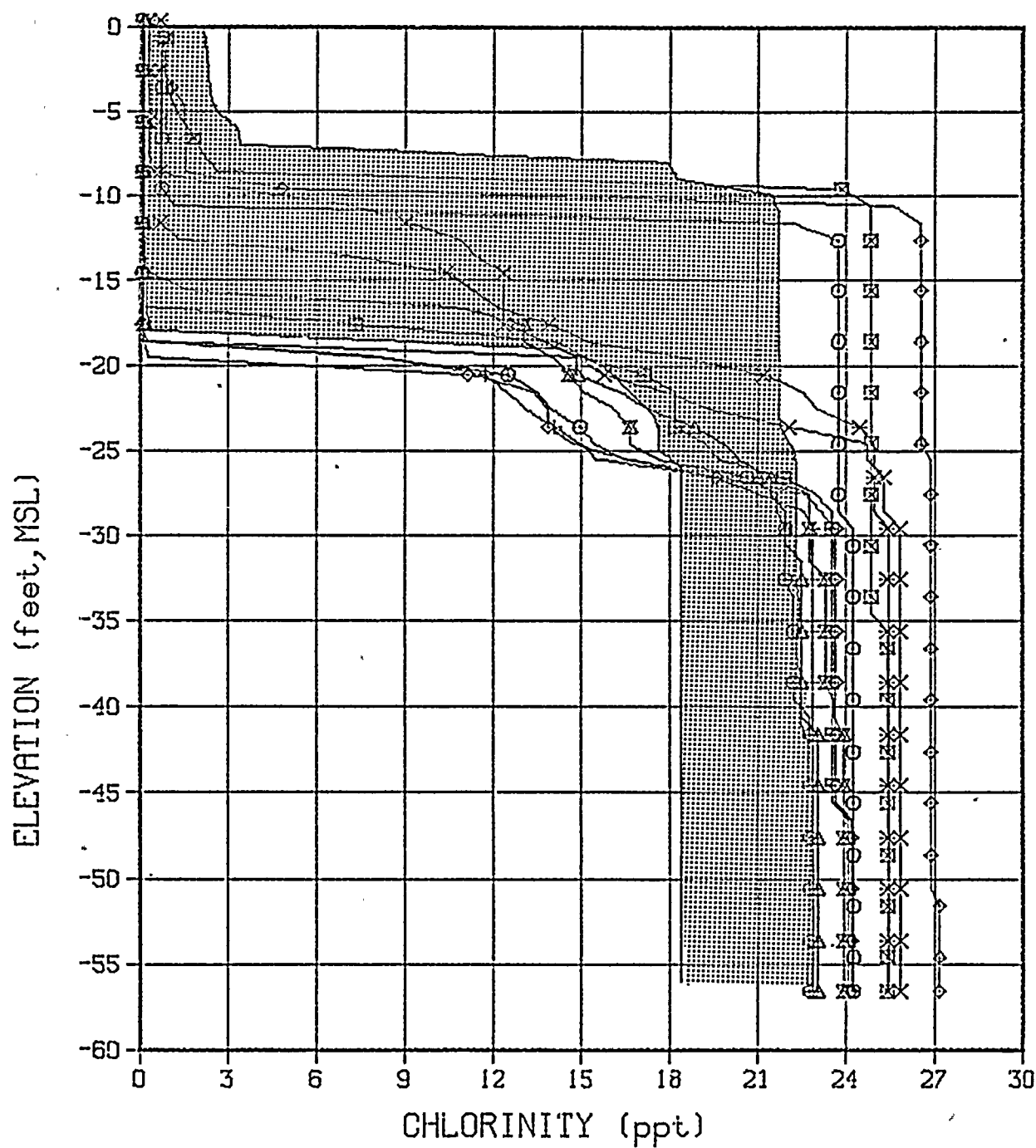
**DAMES & MOORE**

YEARLY RAINFALL  
TURKEY POINT, FLORIDA

0459804726 (REV. 7/81) FIGURE 3







# LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    □ JUN-81    × MAR-81    ◇ MAY-81  
 ⊙ NOV-80    ⚡ OCT-80    ⊞ SEP-80

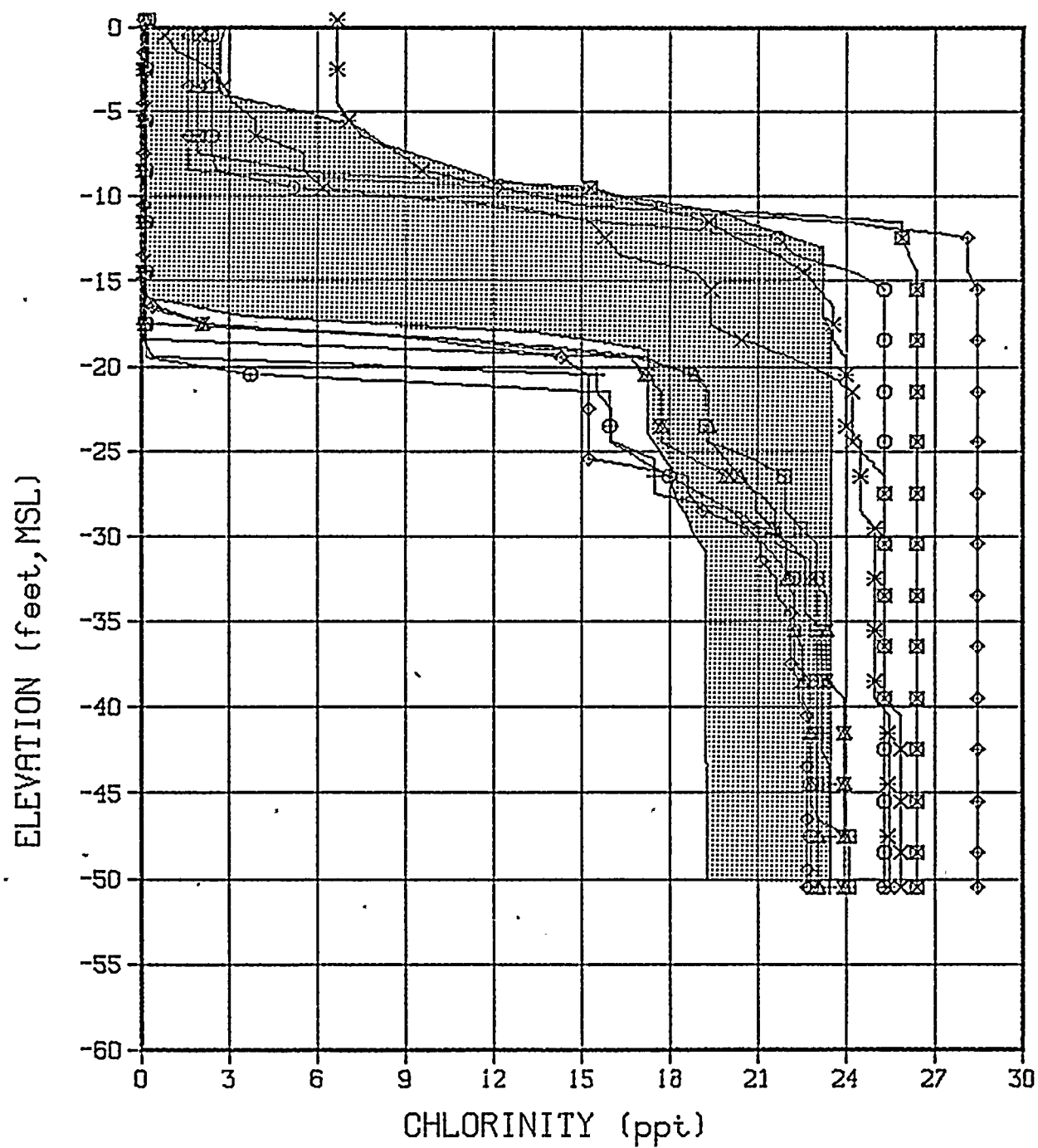
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER ID-A

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    □ JUN-81    \* MAR-81    ◆ MAY-81  
 ⊙ NOV-80    ⊠ OCT-80    ⊞ SEP-80

DAMES AND MOORE

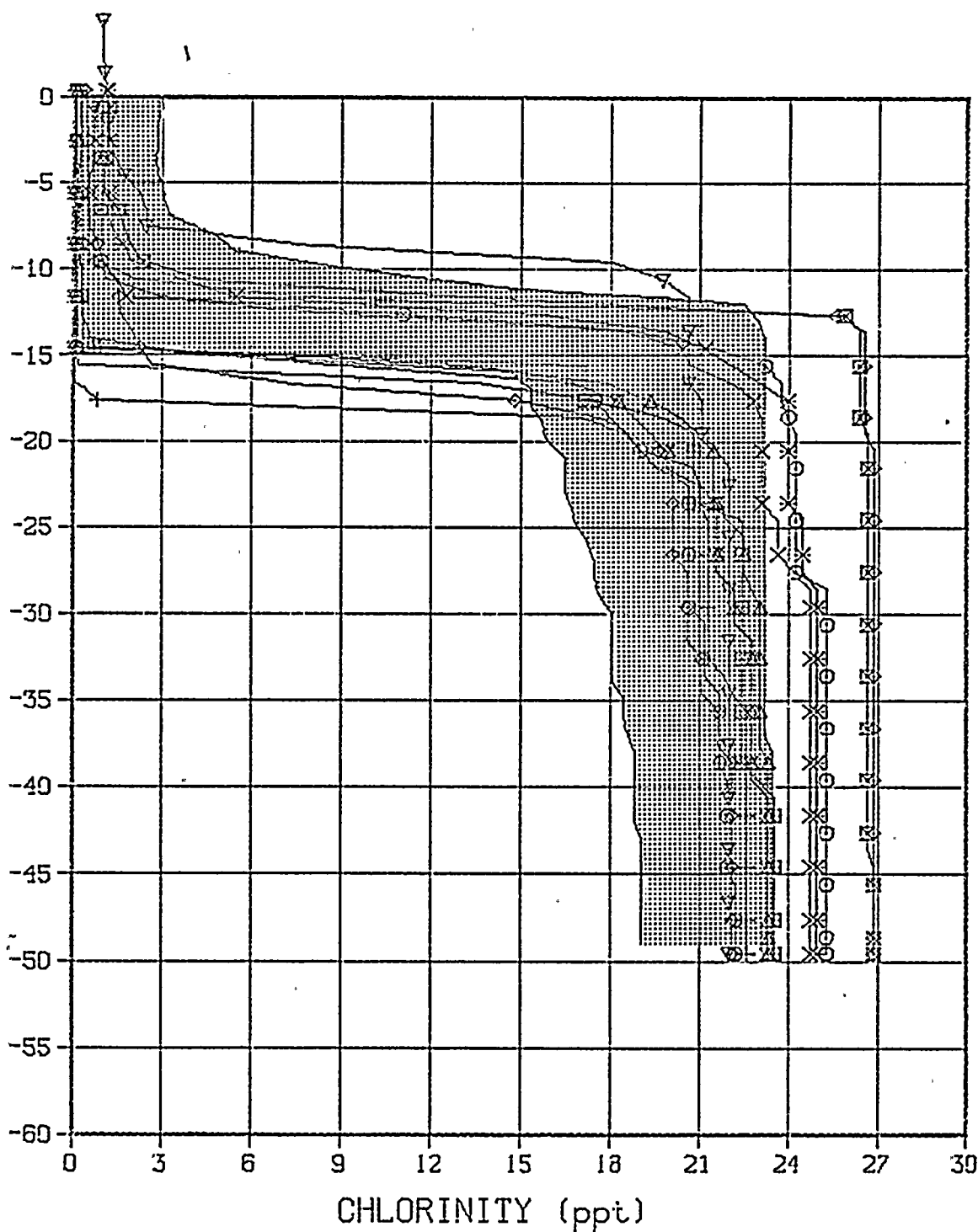
EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER ID-B

0459804726 (7/81)



ELEVATION (feet, MSL)



LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
◇ JAN-81    ▽ JUL-80    ▣ JUN-81    × MAR-81  
◆ MAY-81    ⊙ NOV-80    △ OCT-80    ⊞ SEP-80

DAMES AND MOORE

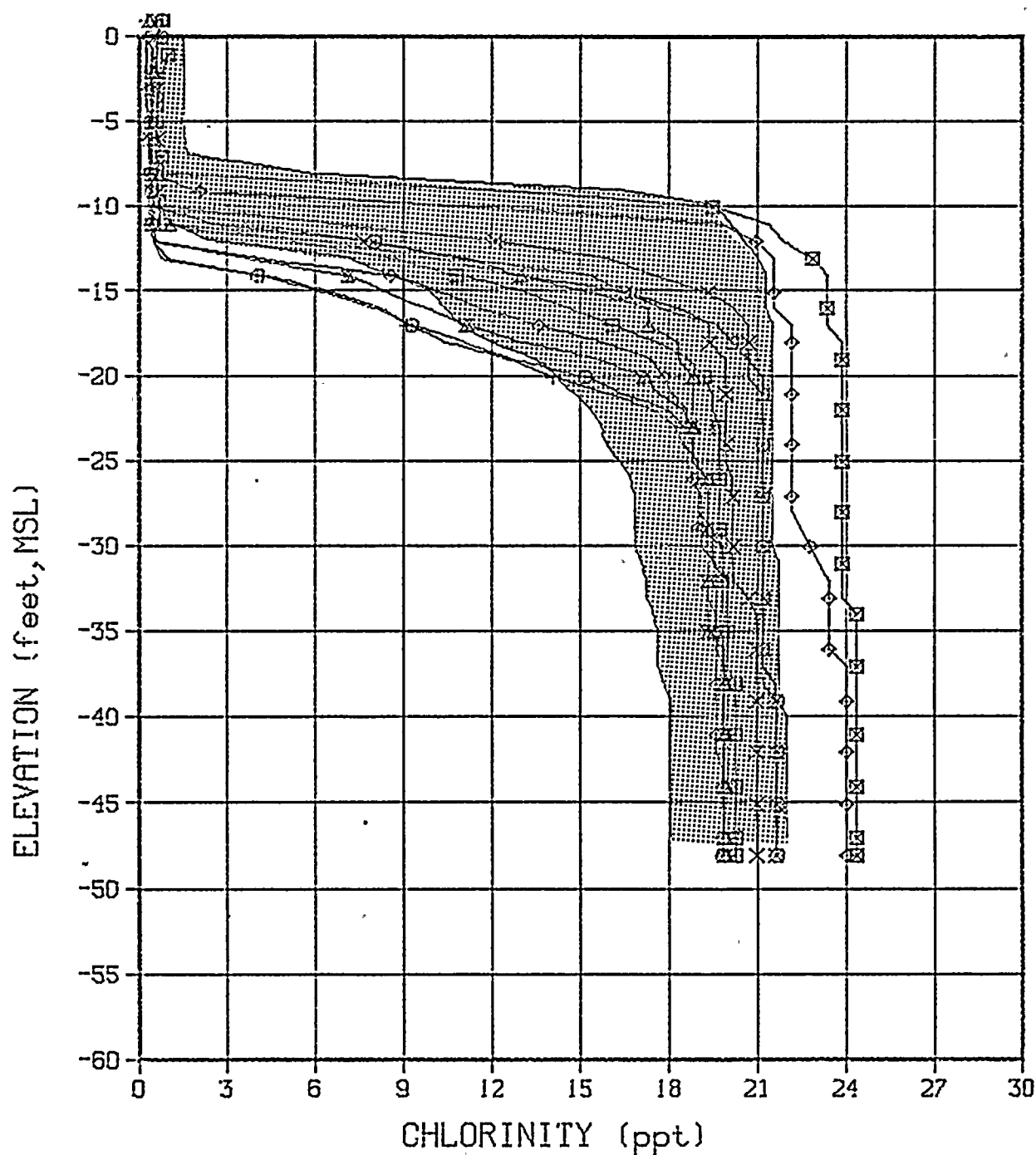
EXCURSIONS FROM CHLORINITY  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER ID-C

0459804726 (7/81)







### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▣ JUN-81    × MAR-81    ◇ MAY-81  
 ⊙ NOV-80    × OCT-80    ⊞ SEP-80

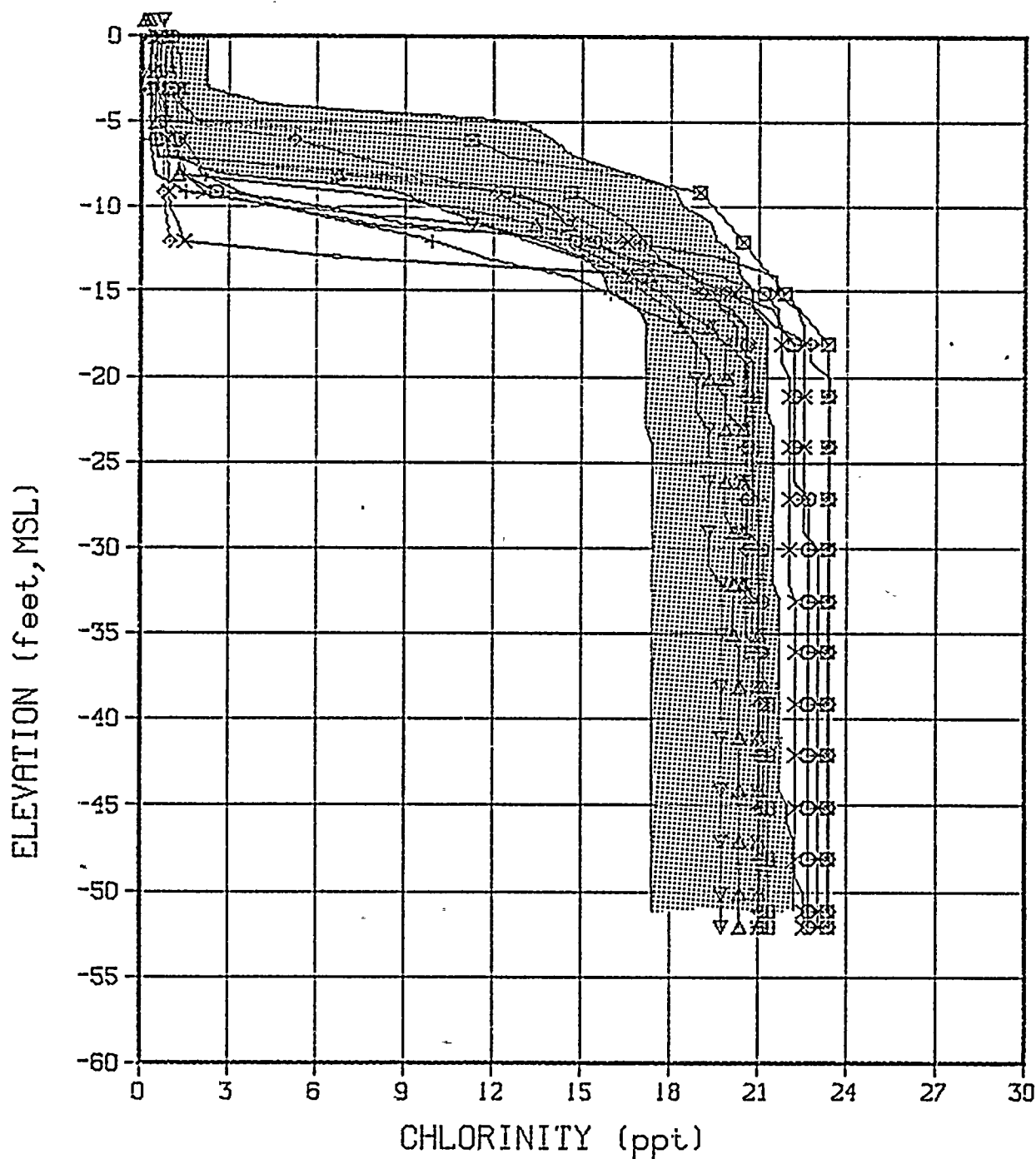
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

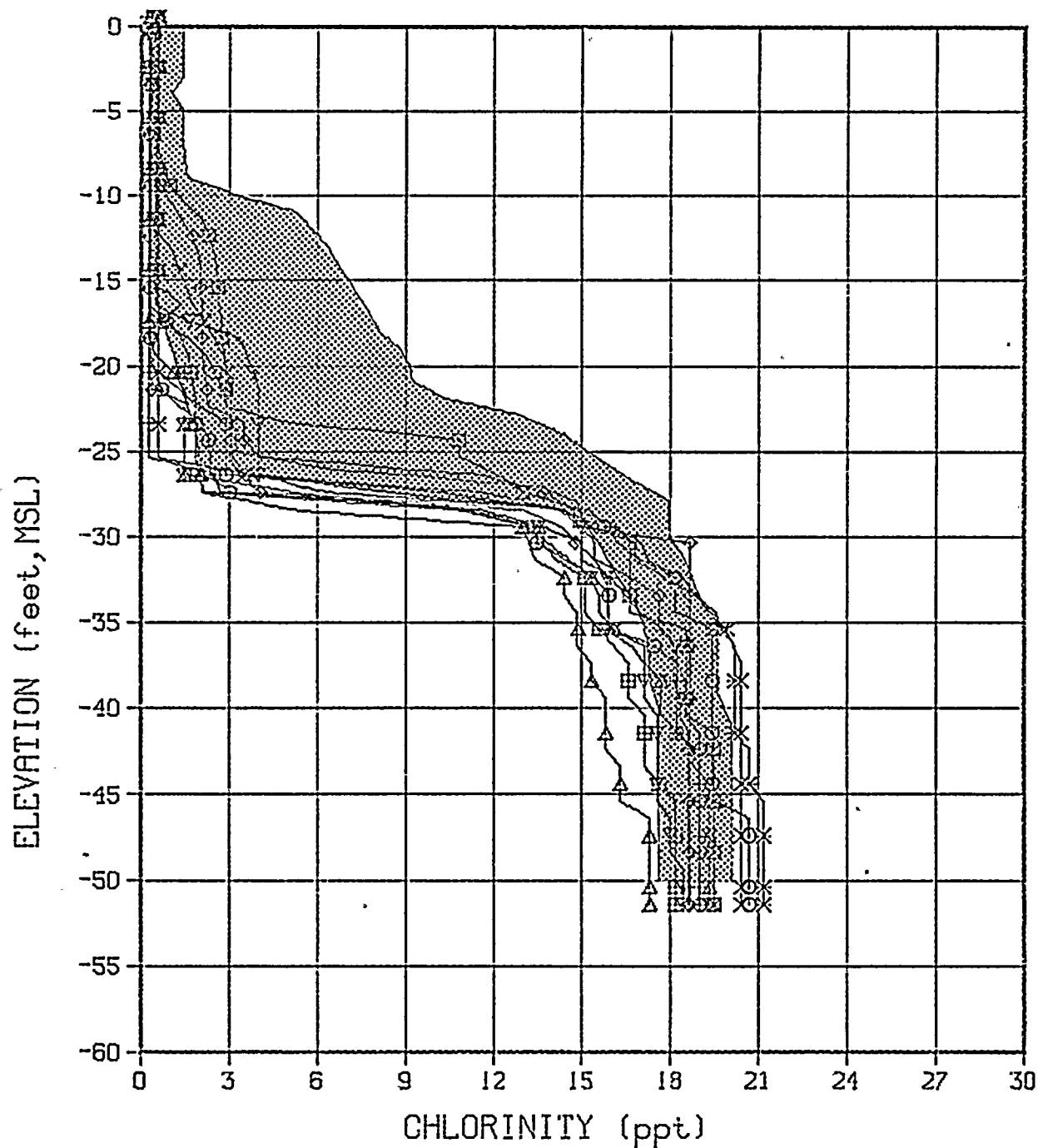
WELL NUMBER ID-D

0459304726 (7/81)









### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ⊠ JUN-81    × MAR-81  
 ◆ MAY-81    ⊙ NOV-80    ⊠ OCT-80    ⊠ SEP-80

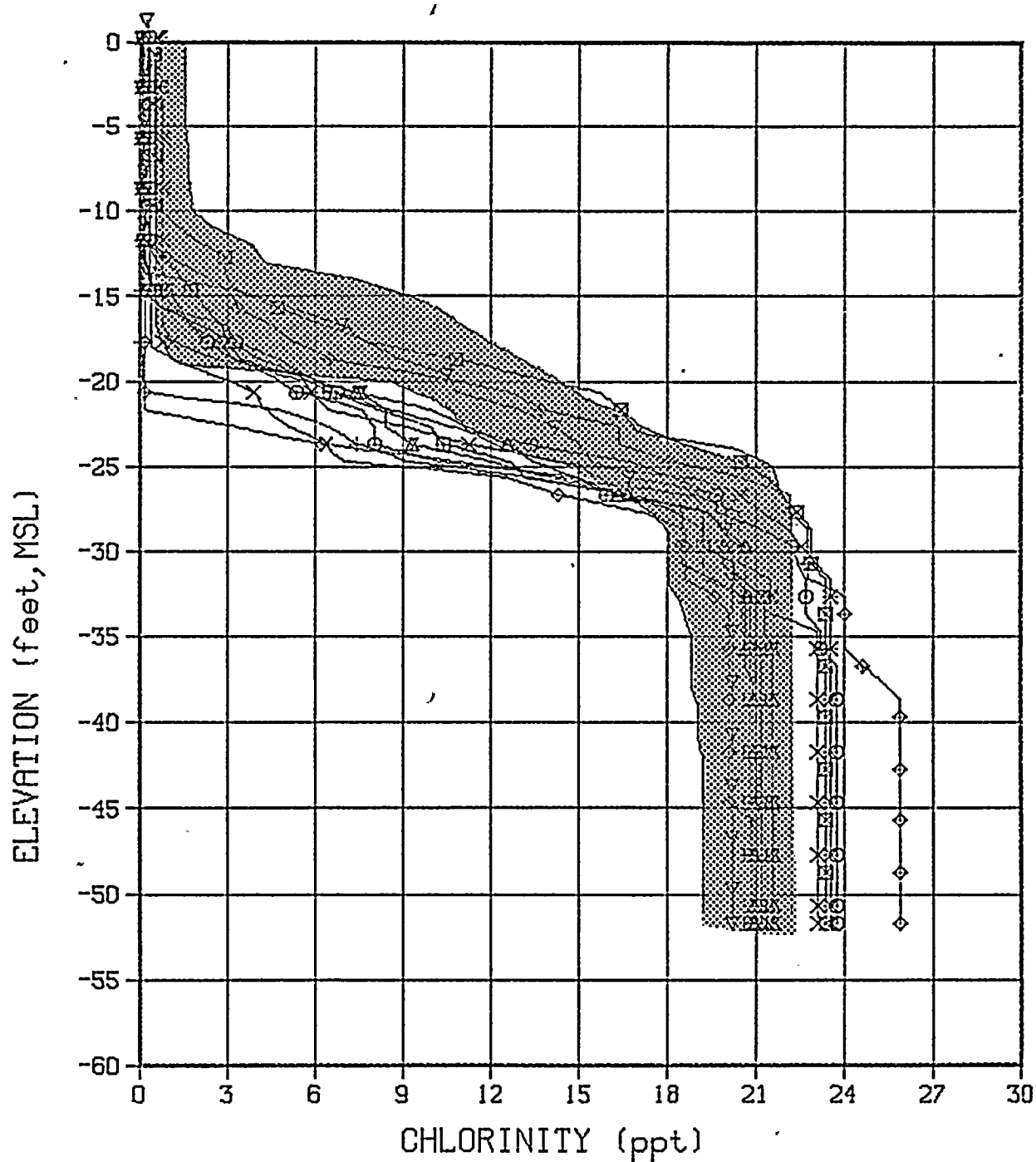
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-1

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ⊠ JUN-81    × MAR-81  
 ◇ MAY-81    ⊙ NOV-80    ⊠ OCT-80    ⊠ SEP-80

DAMES AND MOORE

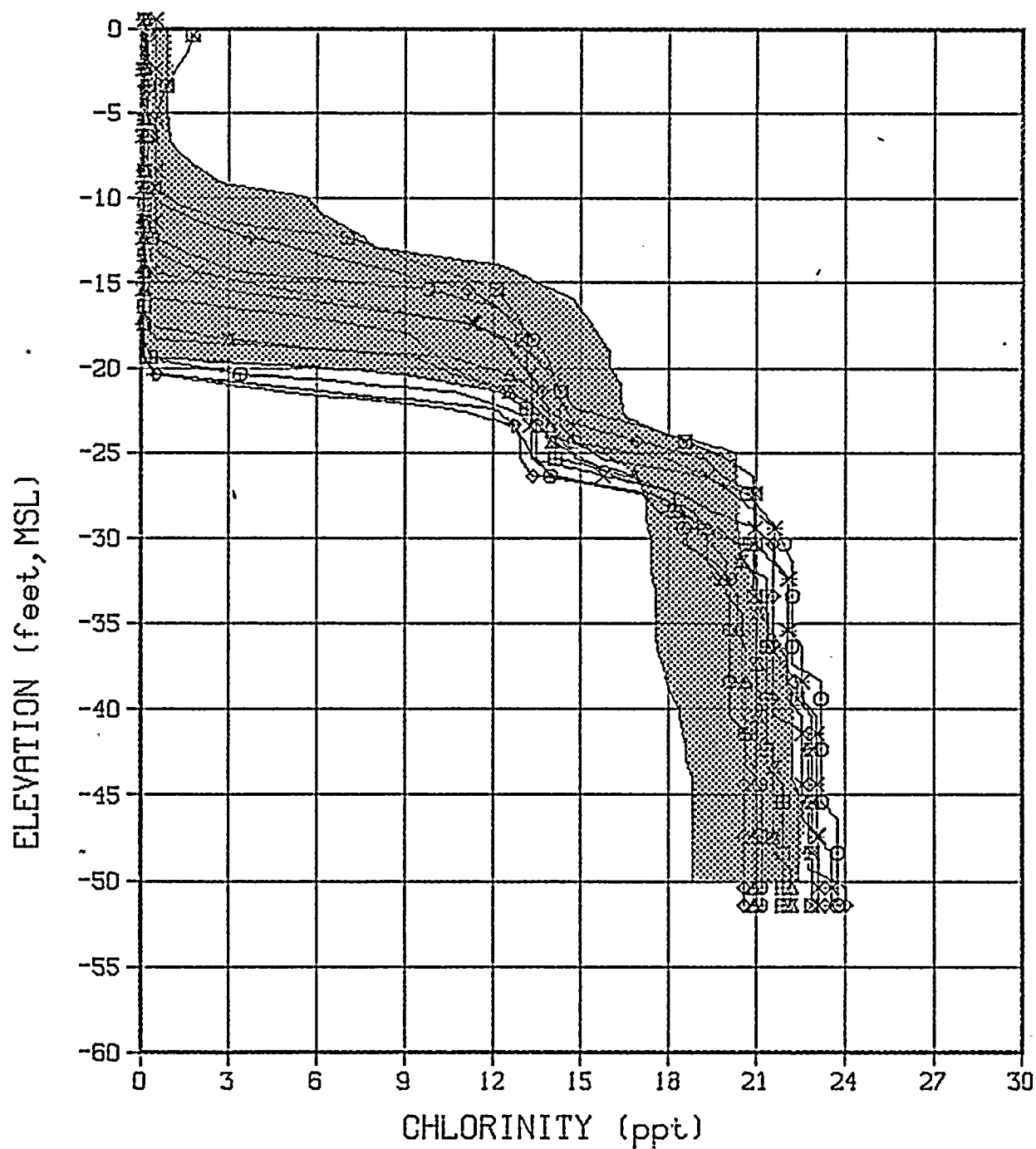
EXCURSIONS FROM CHLORINITY  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-2

0459804726 (7/81)







### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▣ JUN-81    × MAR-81    ◇ MAY-81  
 ⊙ NOV-80    × OCT-80    ▣ SEP-80

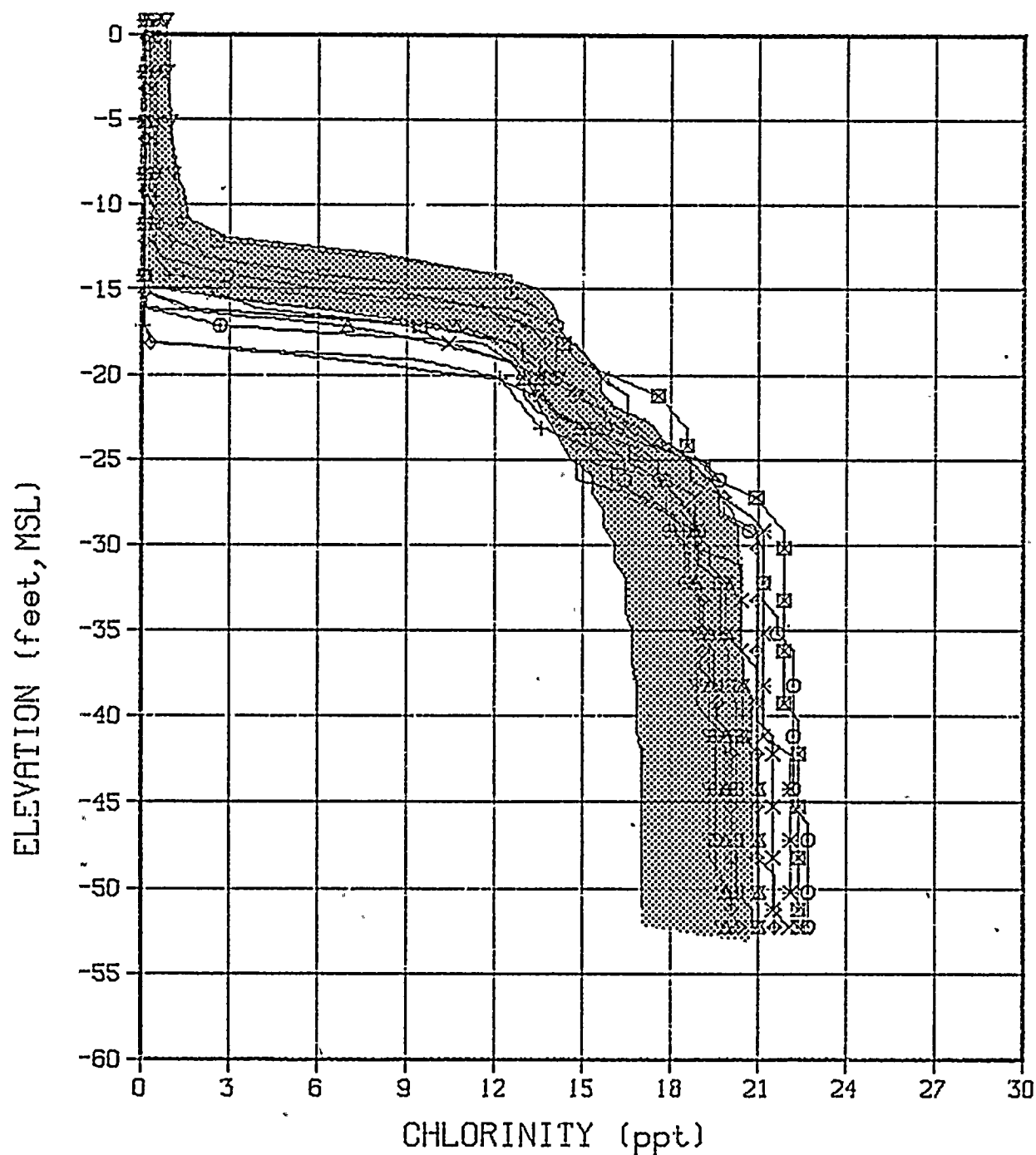
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-3

0459804726 (7/81)





# LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ▣ JUN-81    \* MAR-81  
 ◆ MAY-81    ⊙ NOV-80    ⊠ OCT-80    ⊞ SEP-80

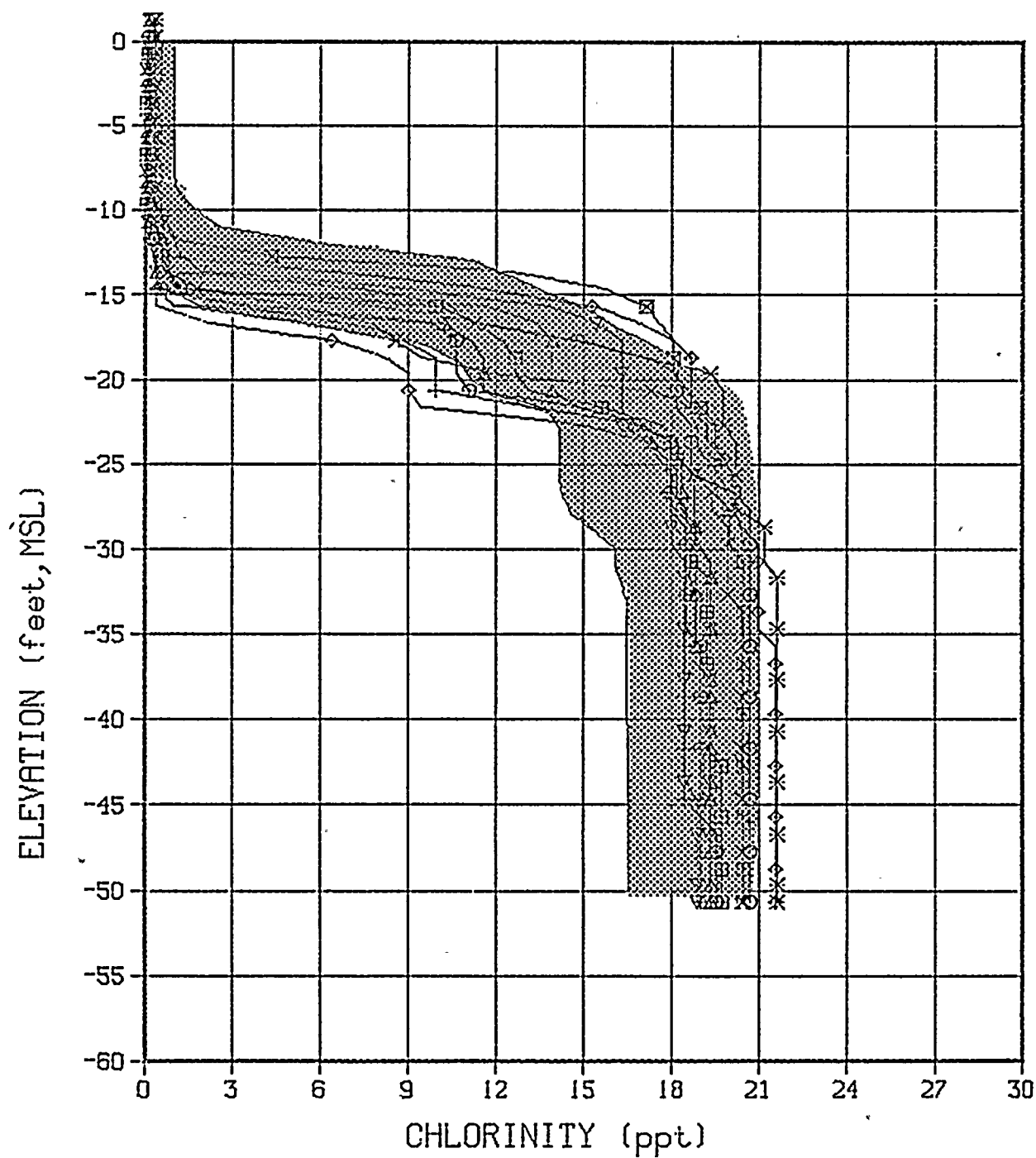
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-4

0459804726 (7/81)





### LEGEND

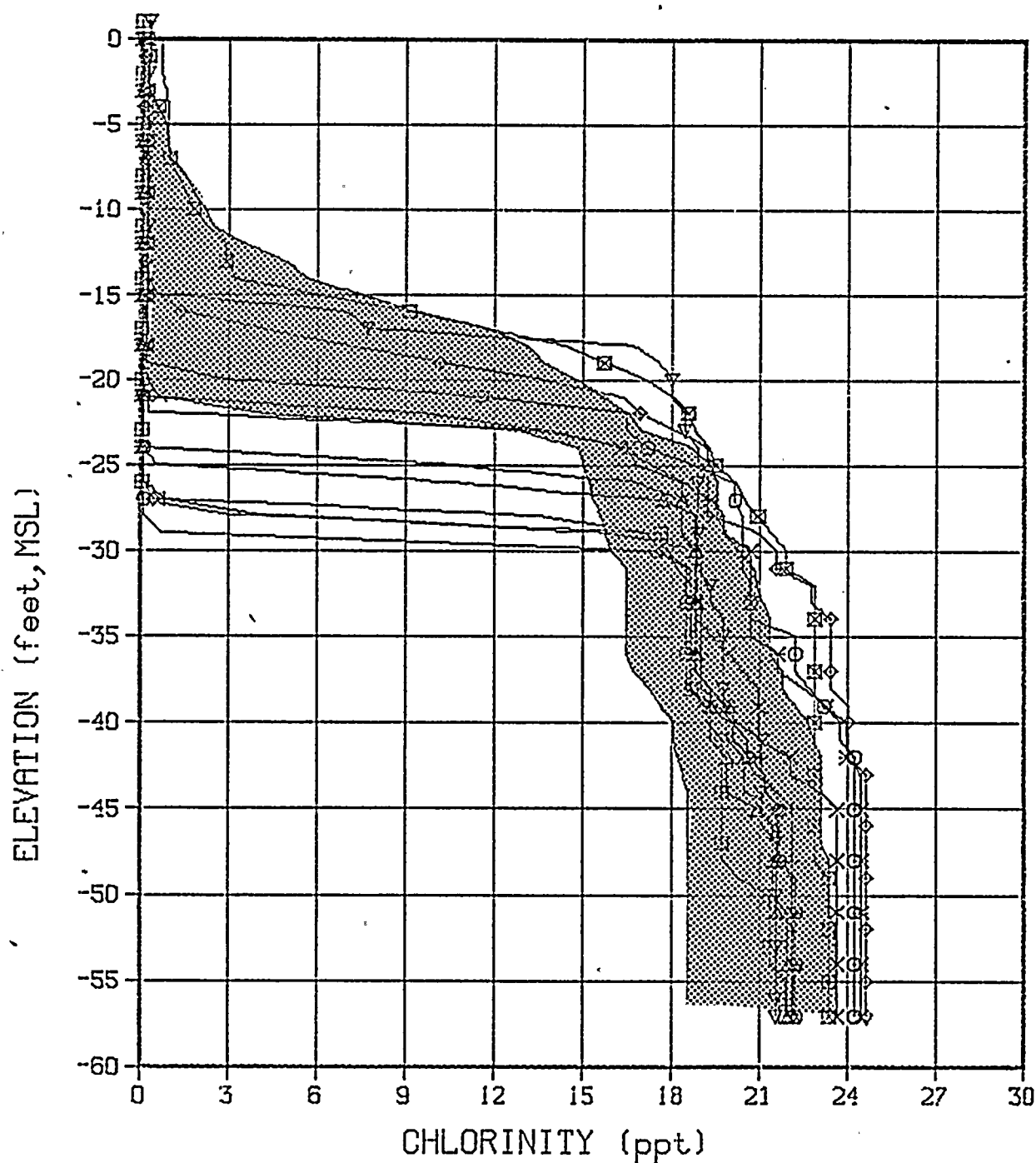
○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    □ JUN-81    \* MAR-81  
 ◇ MAY-81    ⊙ NOV-80    X OCT-80    ⊞ SEP-80

DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81  
 WELL NUMBER L-5

0459804726 (7/81)





# LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ▣ JUN-81    × MAR-81  
 ◆ MAY-81    ⊙ NOV-80    ⊠ OCT-80    ⊞ SEP-80

DAMES AND MOORE

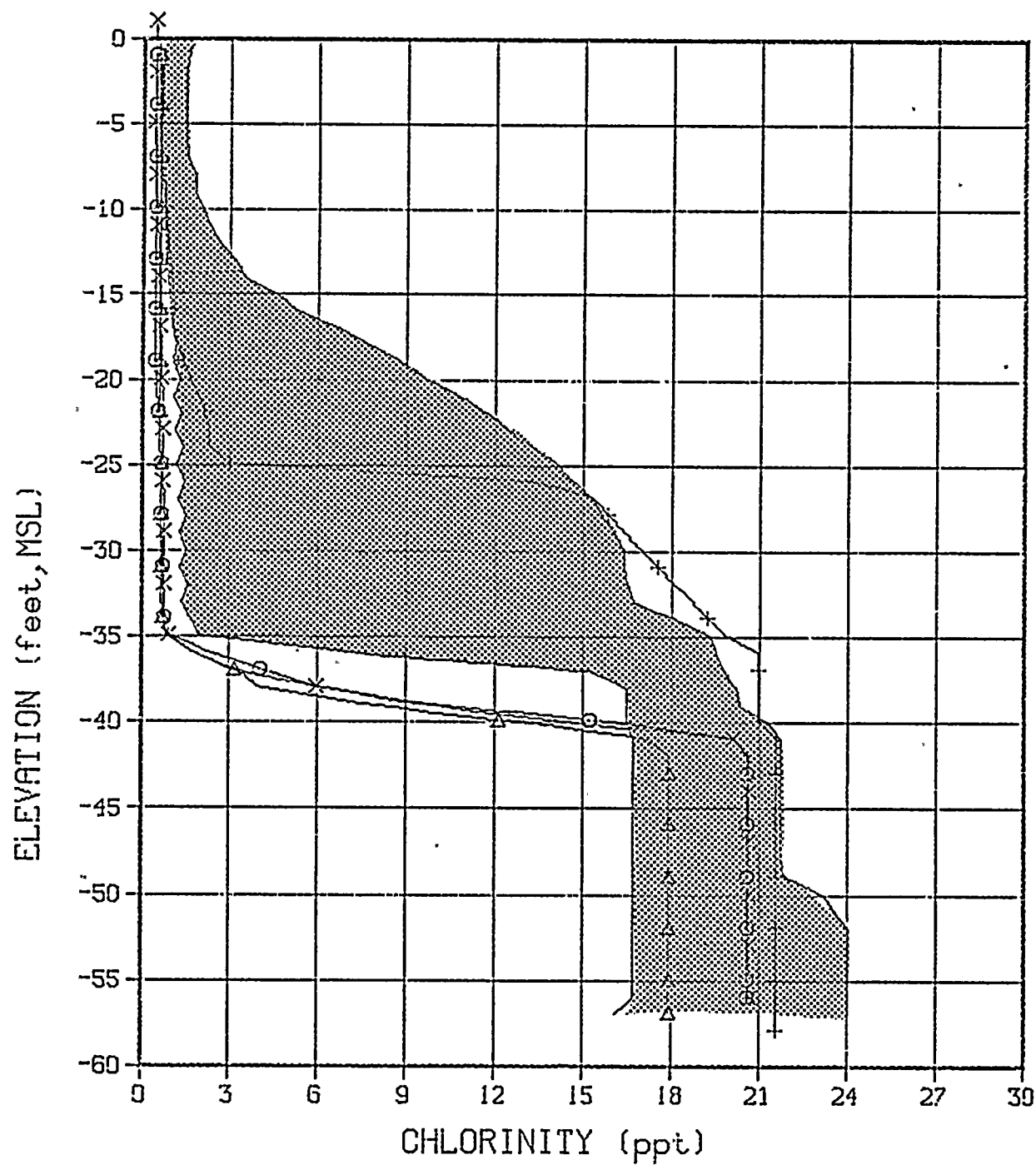
EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-6

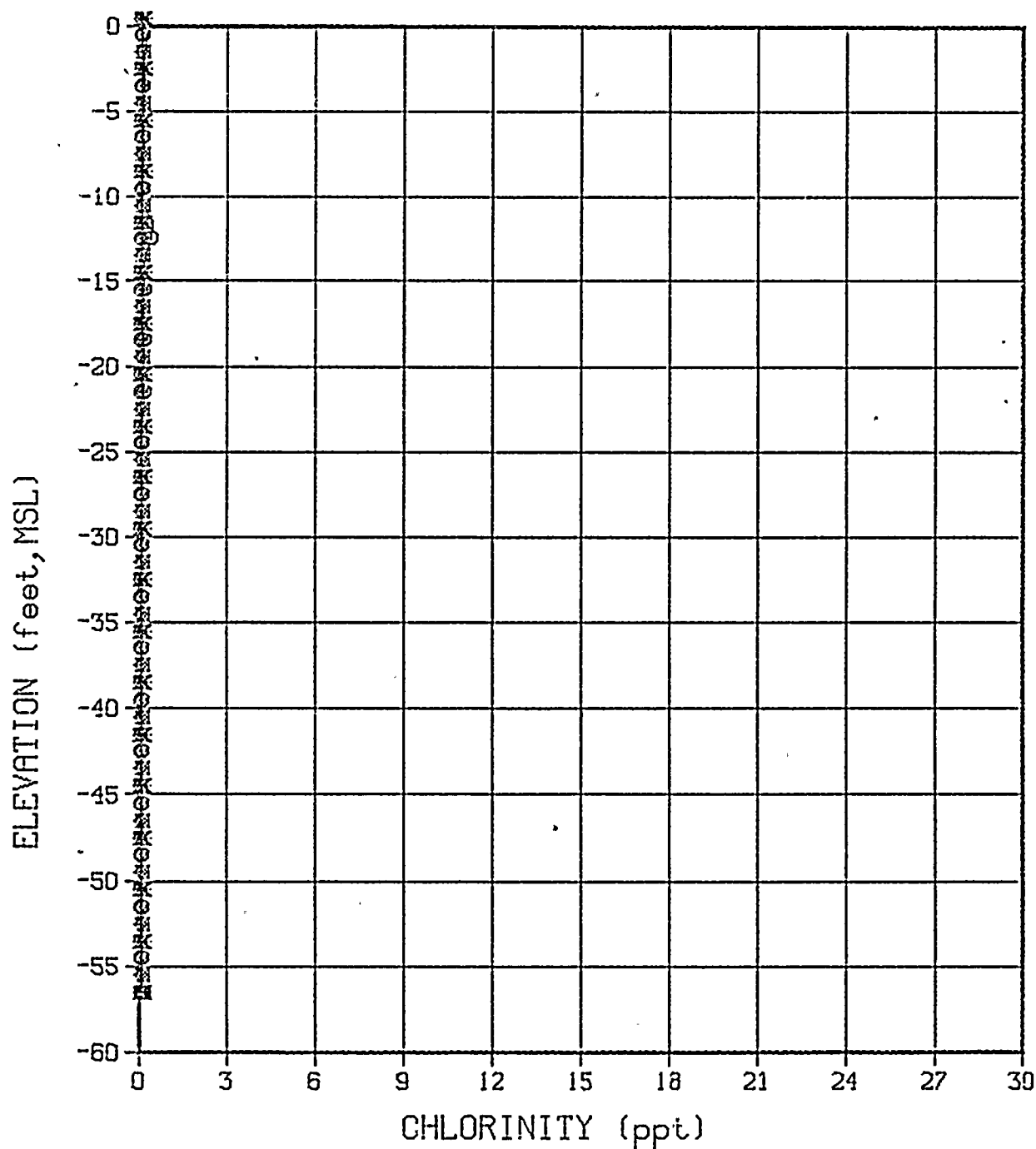
0459804726 (7/81)











### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ▣ JUN-81    × MAR-81  
 ◆ MAY-81    ⊙ NOV-80    ✕ OCT-80    ▣ SEP-80

DAMES AND MOORE

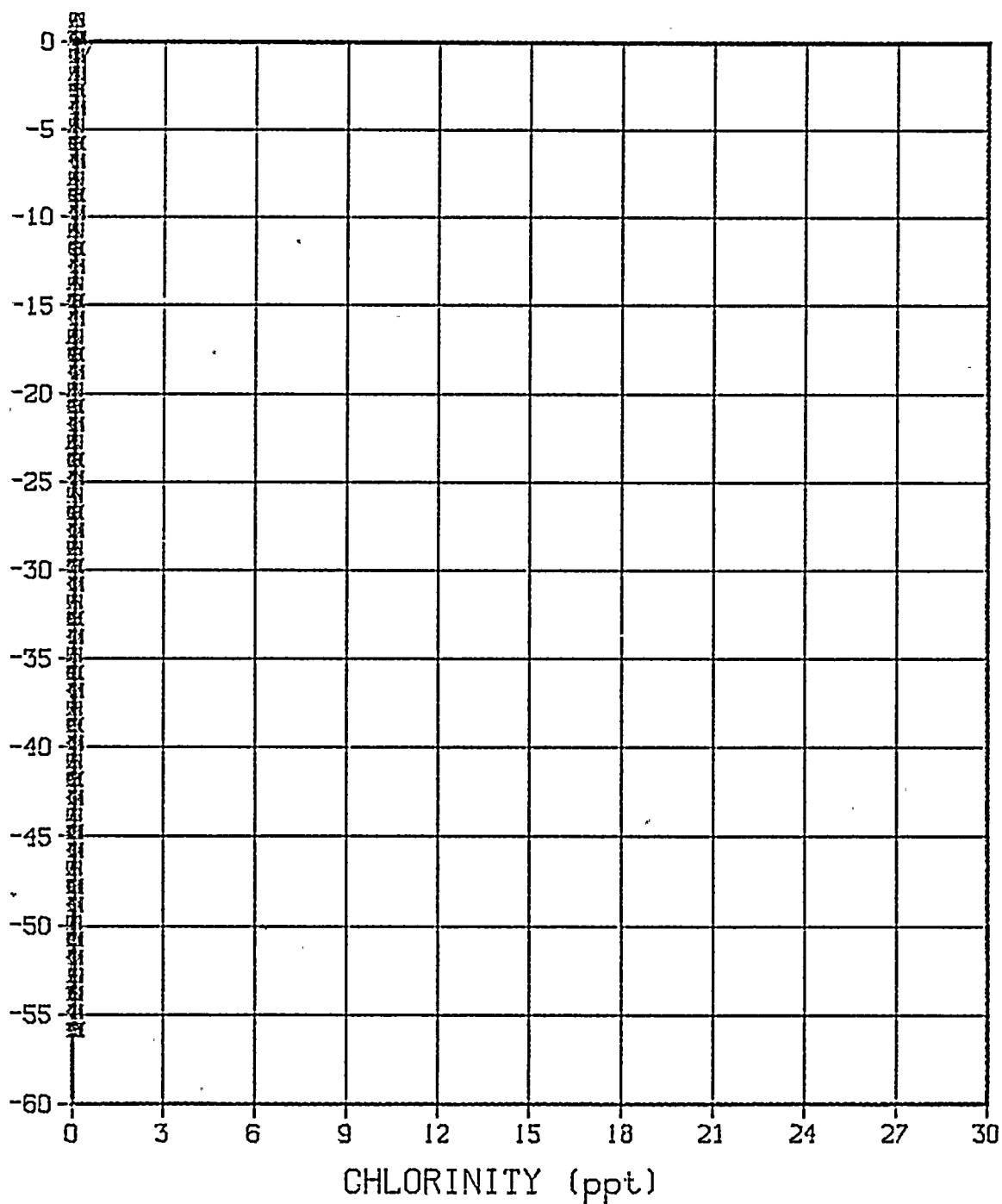
EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-14

0459804726 (7/81)



ELEVATION (feet, MSL)



LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
◇ JAN-81    ▣ JUN-81    ◇ MAY-81    ⊙ NOV-80  
⊗ OCT-80    ▤ SEP-80

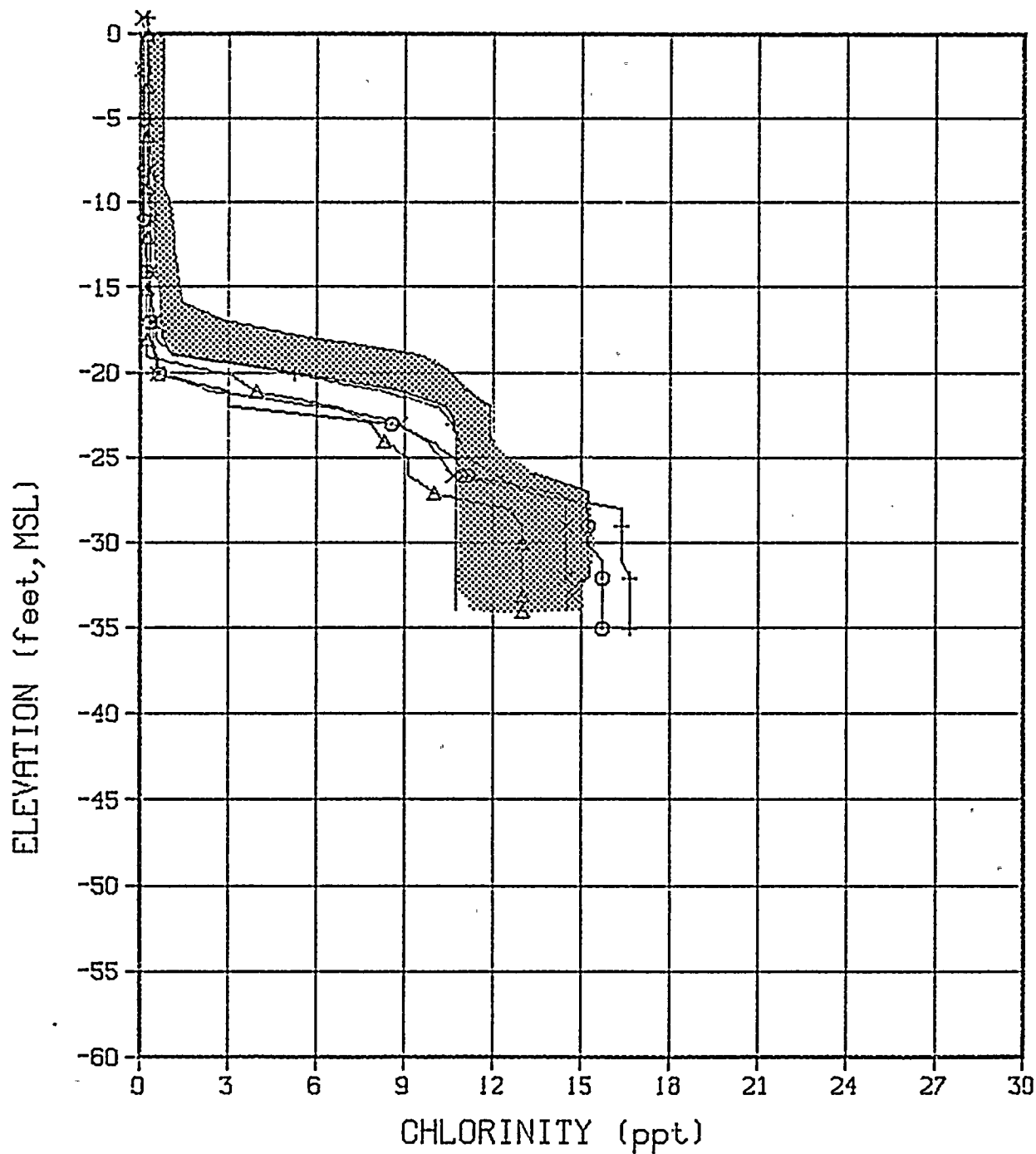
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-21

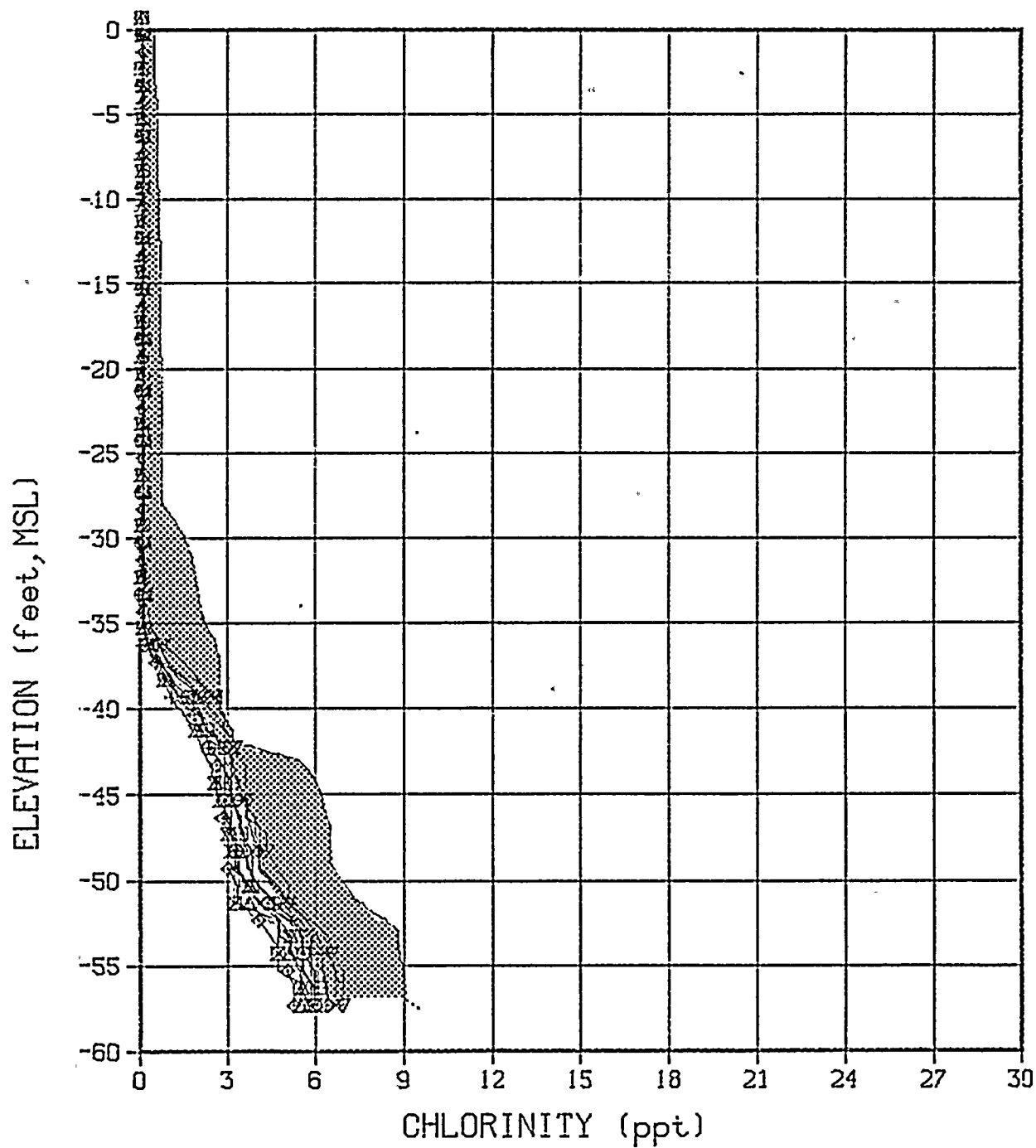
0459804726 (7/81)











### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ▣ JUN-81    × MAR-81  
 ◆ MAY-81    ⊙ NOV-80    ⚡ OCT-80    ⊞ SEP-80

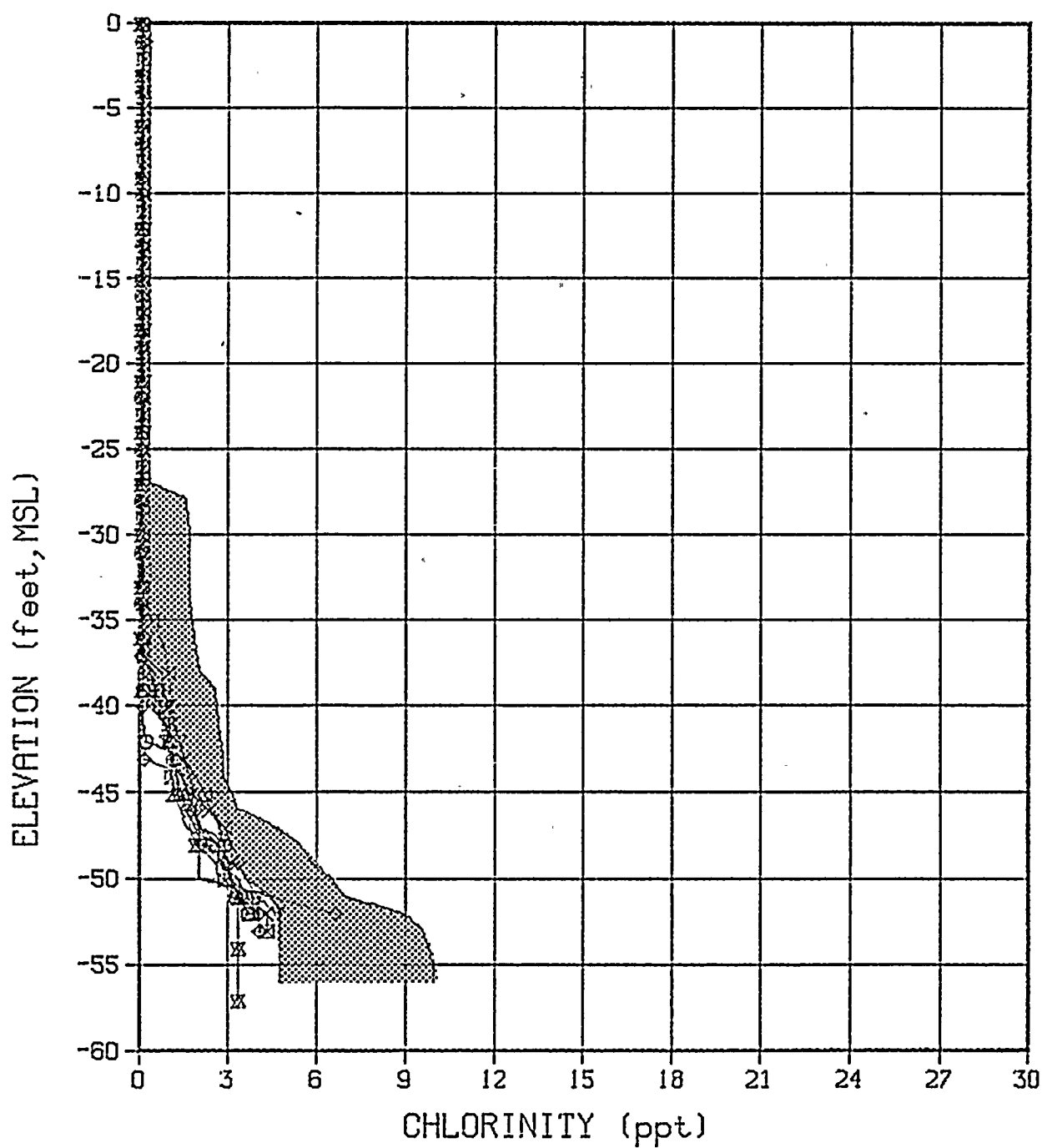
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-28

0459804726 (7/81)





# LEGEND -

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ▣ JUN-81    ◈ MAY-81  
 ⊙ NOV-80    ⊠ OCT-80    ⊞ SEP-80

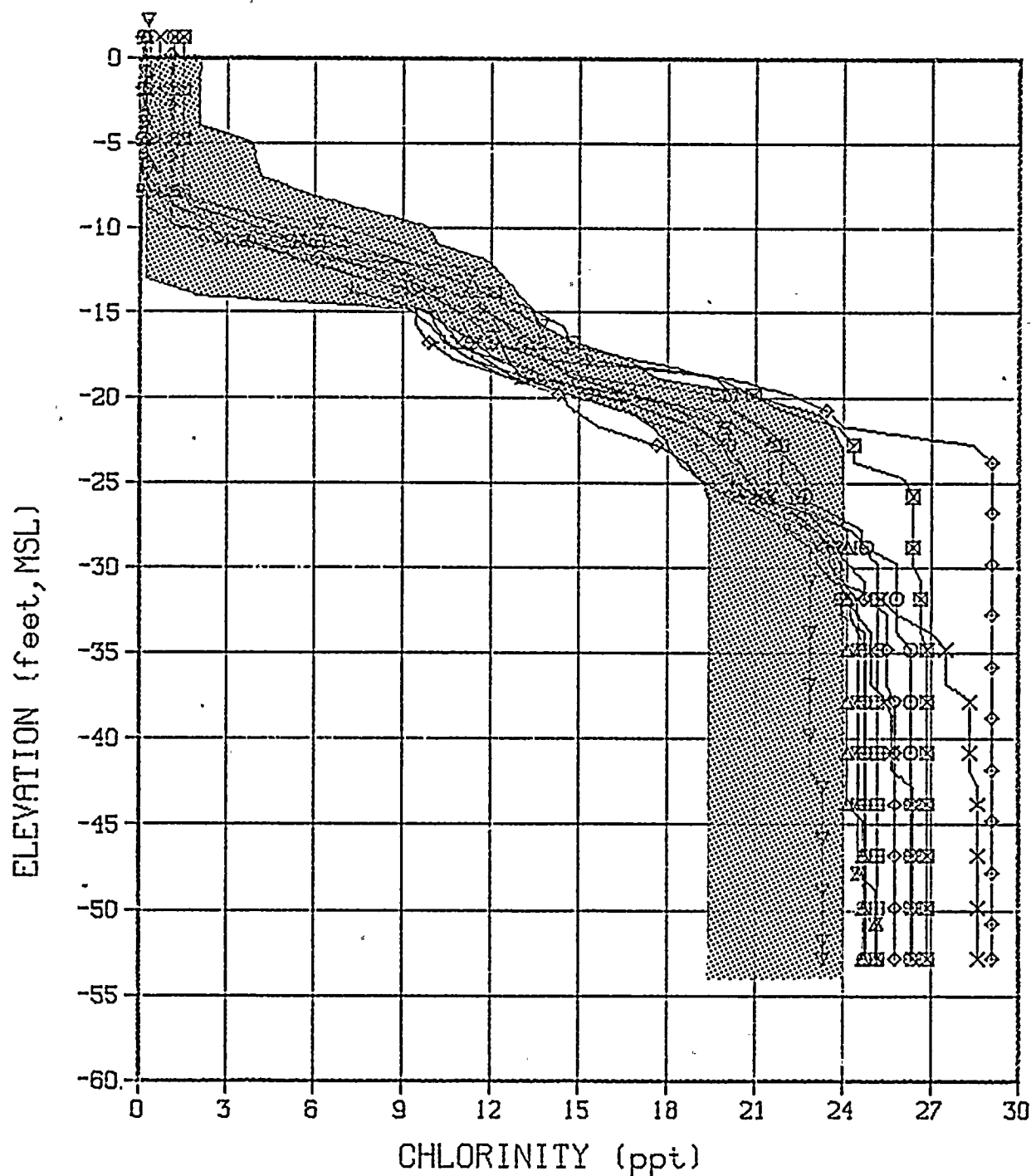
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-35

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ▢ JUN-81    × MAR-81  
 ◇ MAY-81    ⊙ NOV-80    × OCT-80    ▢ SEP-80

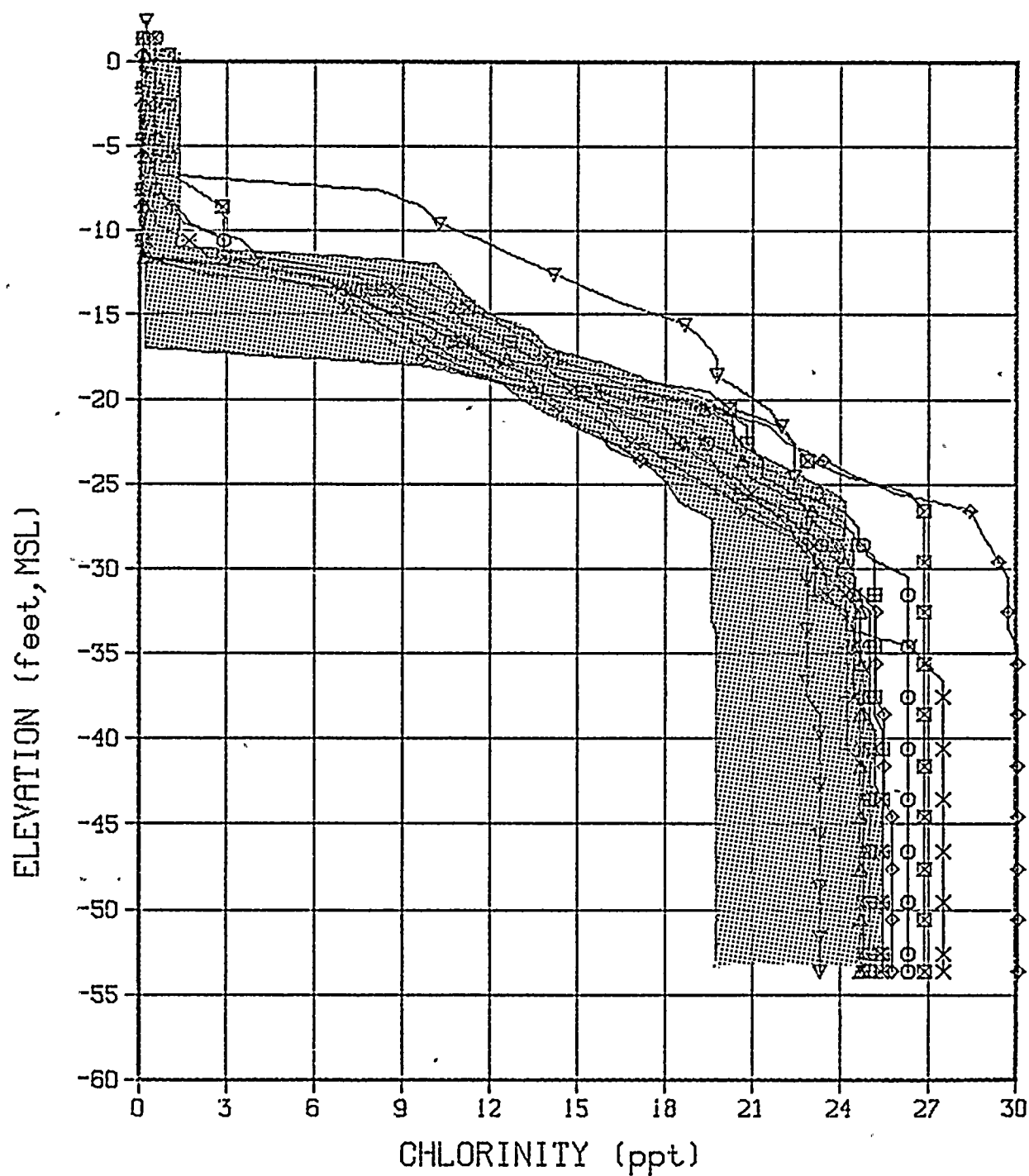
DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER X-1

0459804726 (7/81)





# LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ⊠ JUN-81    × MAR-81  
 ◇ MAY-81    ⊙ NOV-80    ⊠ OCT-80    ⊠ SEP-80

DAMES AND MOORE

EXCURSIONS FROM CHLORINITY  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER X-2

0459804726 (7/81)





APPENDIX E  
MONITORING PROGRAMS



APPENDIX E  
MONITORING PROGRAMS

G-SERIES WELLS

The G-Series Wells Monitoring Program was initiated in April 1972 in compliance with the February 2, 1972, legal agreement between FP&L and the South Florida Water Management District (SFWMD). This monitoring program consisted of two separate but related projects:

1. The Ground Water Quality Monitoring Program and,
2. The Interceptor Ditch Program.

The original ground water monitoring program entailed 38 monitoring wells installed at 23 separate locations west of the cooling canal system and designated as the G-Series wells. Two piezometers, one 50 feet and one 20 feet deep, were installed at 15 of the 23 locations. The 20 feet deep piezometer was located approximately 10 feet north of the 50 feet piezometer.

Surface water and ground water elevations, ground water temperature, and conductivity were measured in each of these wells near the beginning of each month. For the 15 pairs of piezometers, ground water temperature and conductivity were measured at the bottom of the casing; in the composite wells, these parameters were measured at depths of 20, 40, and 60 feet below the top of the well casing. In addition, water samples were obtained to verify and to correlate the water conductivity data by titration for chlorinity. A regression analysis of



these data established the monthly relationship between conductivity and chlorinity, this relationship then being used to convert conductivity to chlorinity.

A revised ground water monitoring program was implemented in November 1976 following ratification of the third supplemental agreement between FP&L and SFWMD in September 1976. The revised program consisted of monitoring the ID-Series wells, the L-Series wells and Wells G-7, G-21, G-28 and G-35 near the beginning of each month. As from January 1979, Well G-14 was substituted for Well G-7 because of damage to the well by local farmers. The L-wells and ID-wells are described in a following section. Additionally, Wells G-6 and G-27 are monitored at the beginning of January, March, May, and November. Monitoring consists of measuring surface water and ground water elevation and ground water conductivity and temperature. Temperature and conductivity are measured at one-foot intervals for the entire well depth. One water sample is obtained from each well for analysis of the chlorinity.

#### L-, ID-, X-WELLS

FP&L installed 13 additional wells to aid in the determination of the effects of the cooling canal system on the ground water. Six wells were installed along Levee 31E Borrow Canal (L-wells), five along the Interceptor Ditch (ID-wells), and two north of the Feeder Canal (X-wells). These wells are composite wells extending to a depth of approximately 70 feet.



A flexible monitoring schedule was maintained for these wells. These wells were normally monitored at about two-week frequencies (near the beginning of the month when the G-Series wells were monitored and near the middle of the month). Temperature and conductivity measurements were initially made in these wells at five-foot intervals from the ground water surface to the bottom of the casing. However, since December 1975, temperature and conductivity measurements have been made at one-foot intervals.

As mentioned previously, the ID- and L-wells are now incorporated in the G-Series Wells Monitoring Program. These wells are monitored once a month. Similarly, the X-wells are monitored once a month.

#### MONITORING EQUIPMENT

The in-situ conductivity and temperature measurements are obtained with a Hydrolab TC-2 conductivity-temperature meter. Calibration of the field conductivity meters is done in the laboratory with saline solutions of known conductivity at the beginning and end of each day of measurements.

Water samples are obtained with a masterflex sampling pump.

The reader is referred to the March 31, 1976 G-Series Wells Summary Report for more detailed descriptions of monitoring equipment and calibration.

No new equipment was acquired during the period July 1980 through June 1981.





### LABORATORY ANALYSES

The water samples collected during the monthly monitoring programs are titrated to determine chlorinity. The chlorinity was determined by titrating the water samples with silver nitrate, using a potassium chromate solution as the end point indicator; recently a mercuric nitrate has been substituted, as it provides a more readily identified end point. These titrations are performed at Florida Power & Light's laboratories at Turkey Point.

The chlorinity, once it is determined, is used to develop a relationship between conductivity and chlorinity content. Conductivity-chlorinity relationships are determined for each series of wells each month. The conductivity-chlorinity relationships developed for this monitoring period are shown in Appendix B.

The conductivity-chlorinity relationships are used to convert the appropriate monthly conductivity data to equivalent values of chlorinity.

The methodology used to determine the conductivity-chlorinity relationships is discussed in greater detail in the G-well summary report.

### MONITORING PROGRAM LOGISTICS

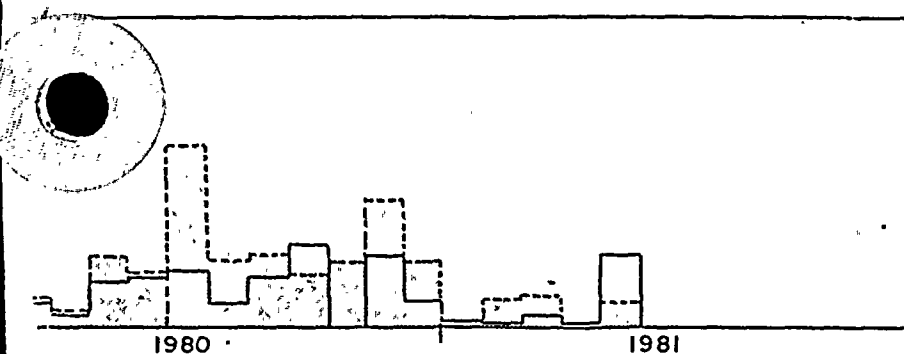
Field data collection efforts have been conducted from the FP&L field laboratories at Turkey Point. All monitoring equipment is stored at these facilities. Instrument calibration



and most instrument maintenance have been handled at these facilities.

Transportation to the monitoring wells is dependent on well location. Some of the wells are located in swampy areas and are accessible only by helicopter. Since discontinuance of the E-Well Monitoring Program, a helicopter will be required onsite only during the months of January, March, May, and November for the revised ground-water monitoring programs. During the remaining months all the required wells can be reached by automobile.





# STRUCTURE 20 AND STRUCTURE 20 F

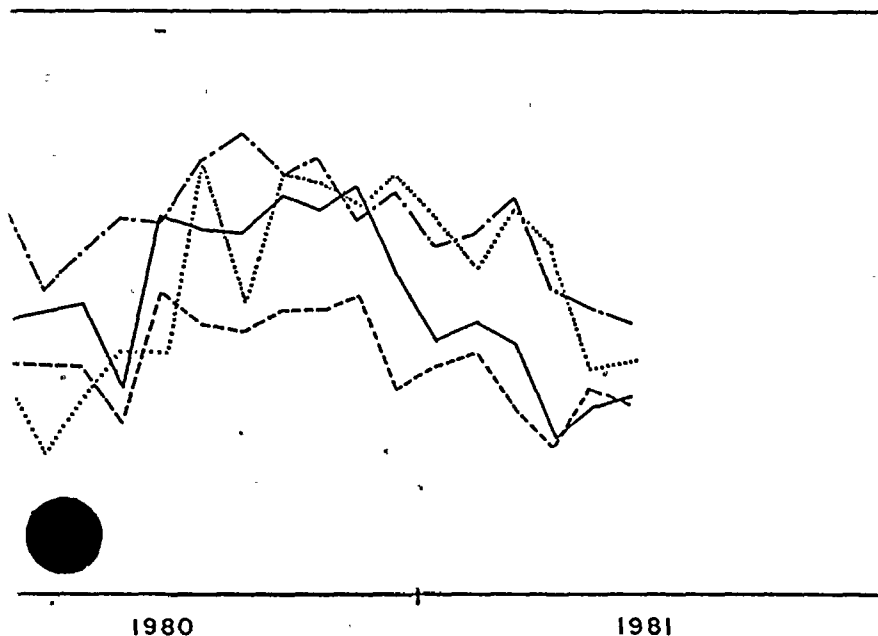
— 20  
- - - 20F

## SURFACE WATER LEVELS

— L-31  
- - - C-32

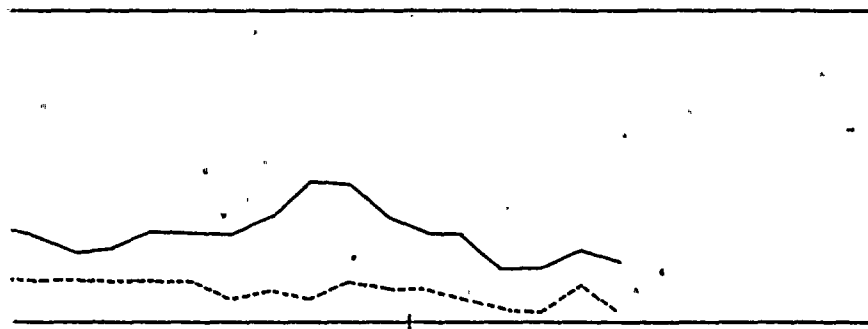
## GROUND WATER LEVELS

..... G-28  
- - - L-3



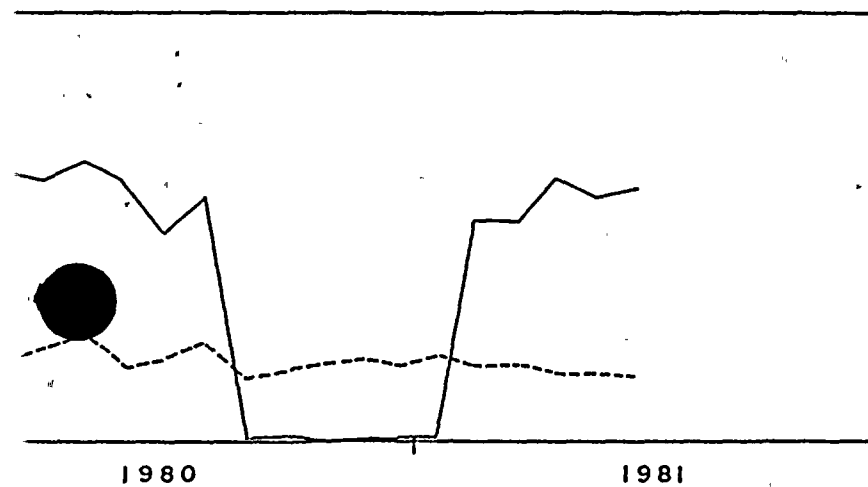
## TEMPERATURE

— L-3 (AT -17.5 FT.)  
- - - G-28 (AT -50.0 FT.)



## CHLORINITY VALUES

— L-3 (AT -17.5 FT.)  
- - - G-28 (AT -50.0 FT.)

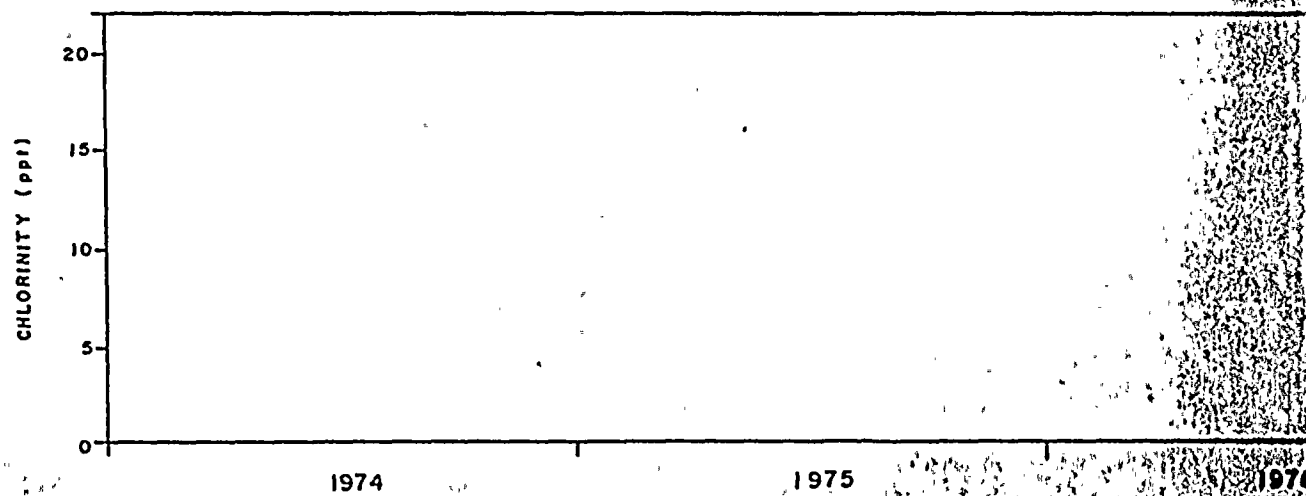
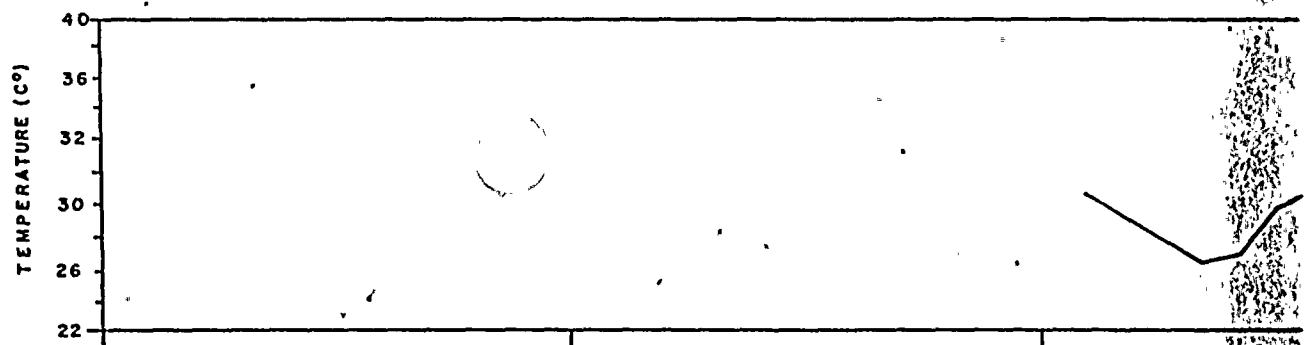
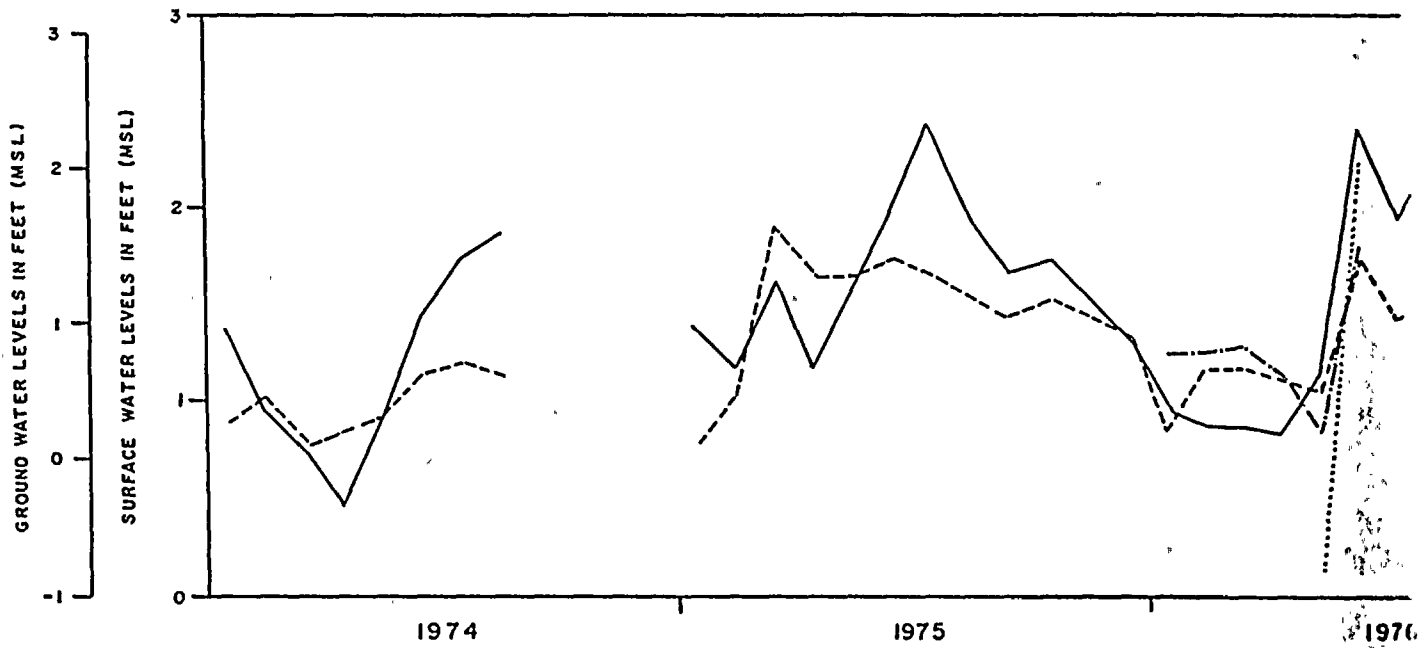
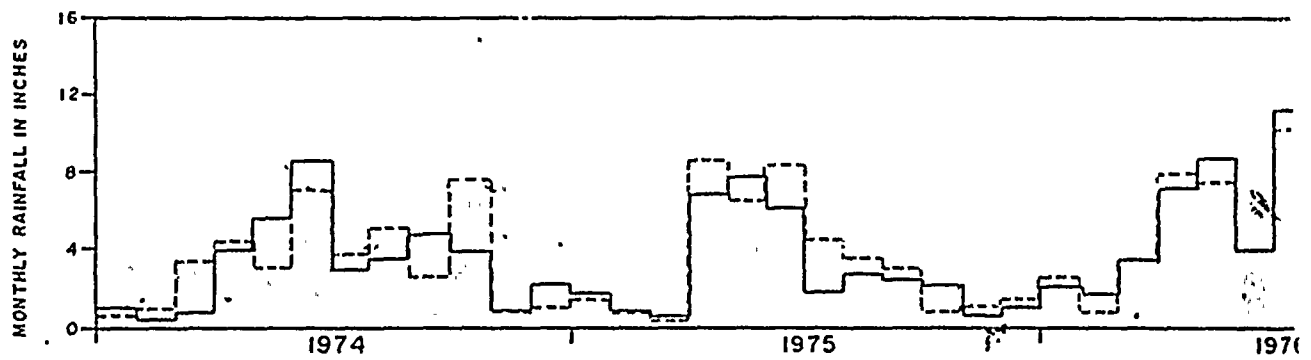


TIME HISTORY:  
RAINFALL, WATER LEVELS AND  
GROUND-WATER TEMPERATURE  
AND CHLORINITY

DAMES & MOORE

FIGURE 4

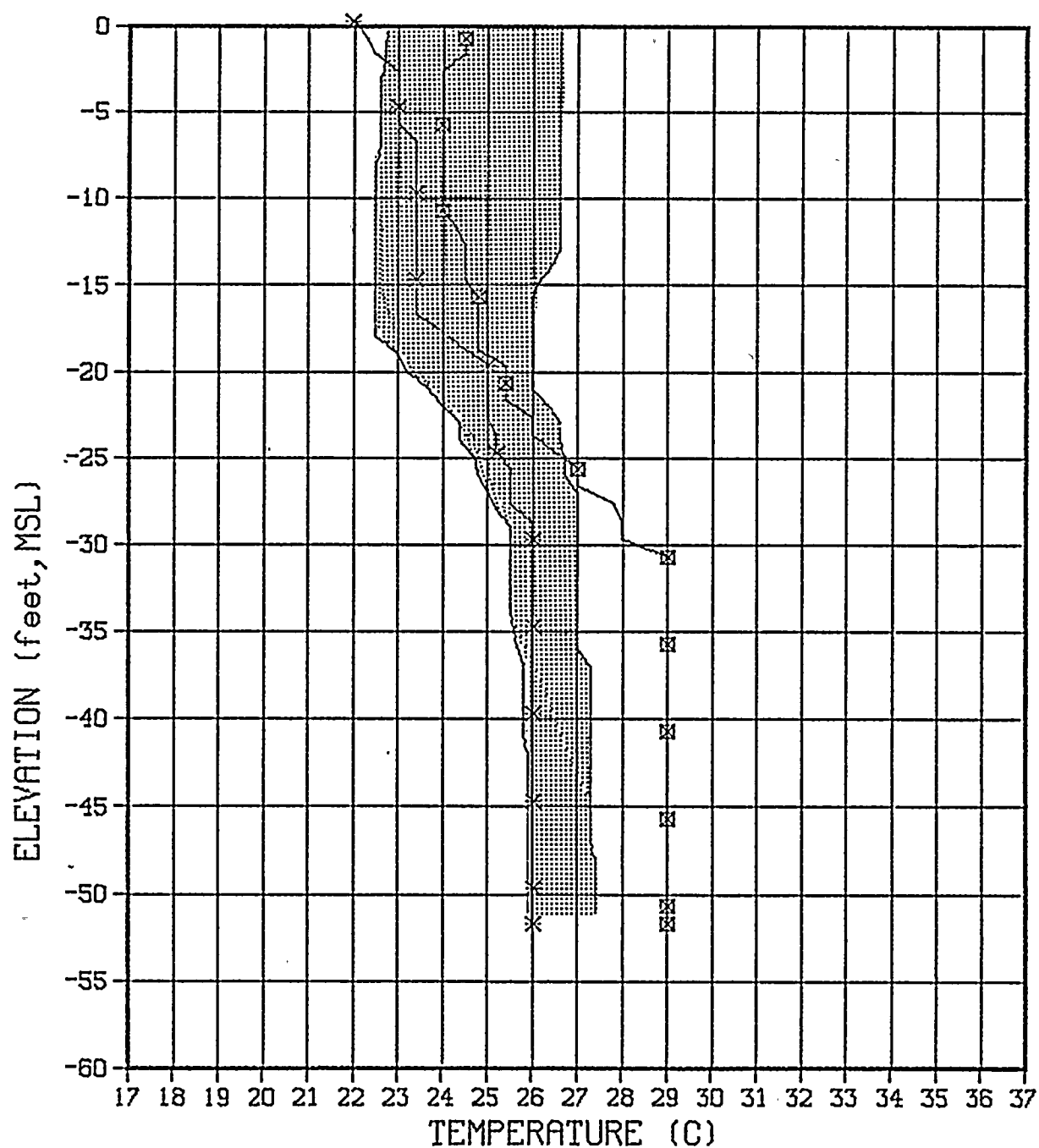




0459804726 (11/79)







### LEGEND

x MAR-81

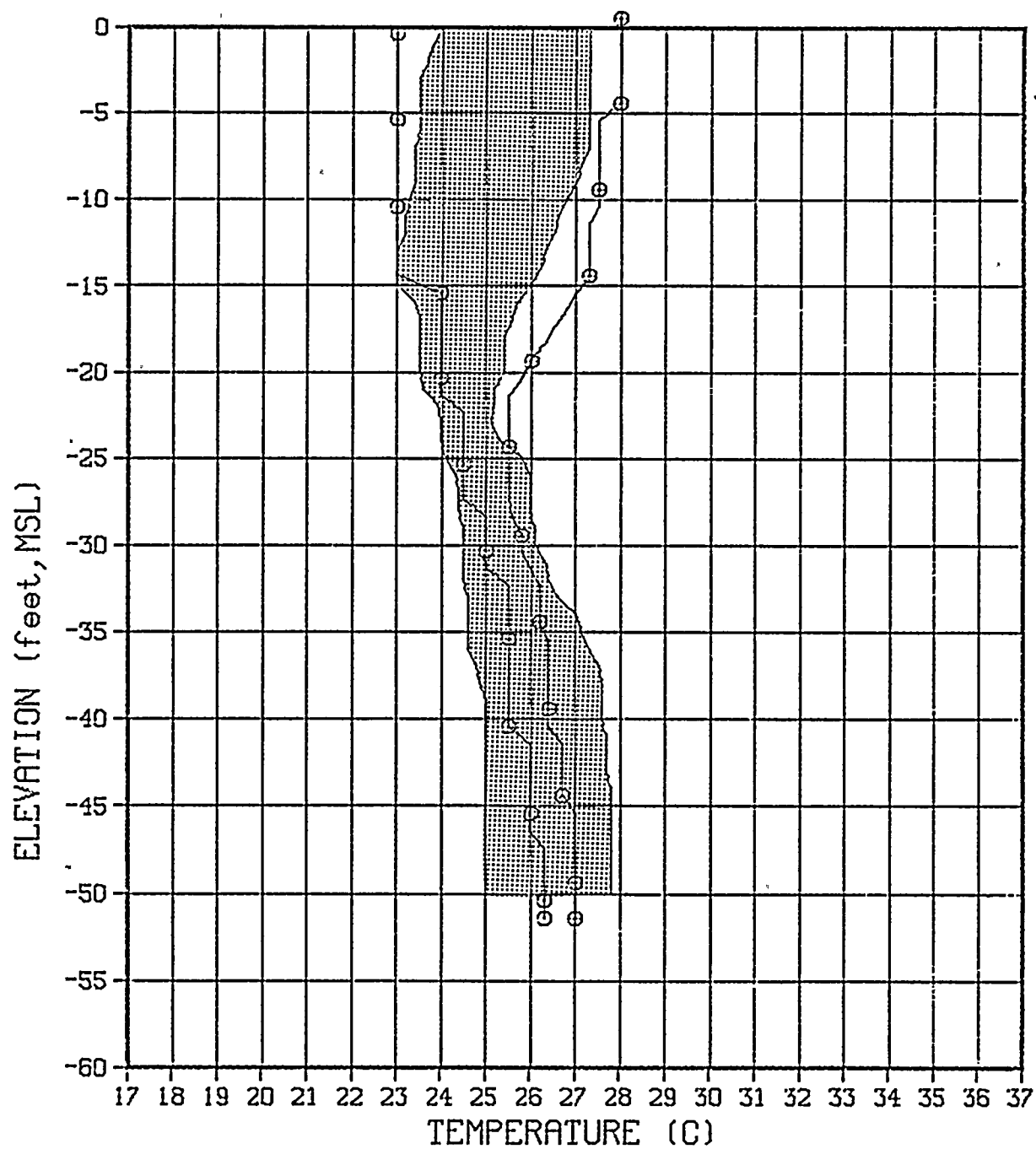
□ JUN-81

DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER L-2

0459804726 (7/81) FIGURE 5





# LEGEND

○ APR-81

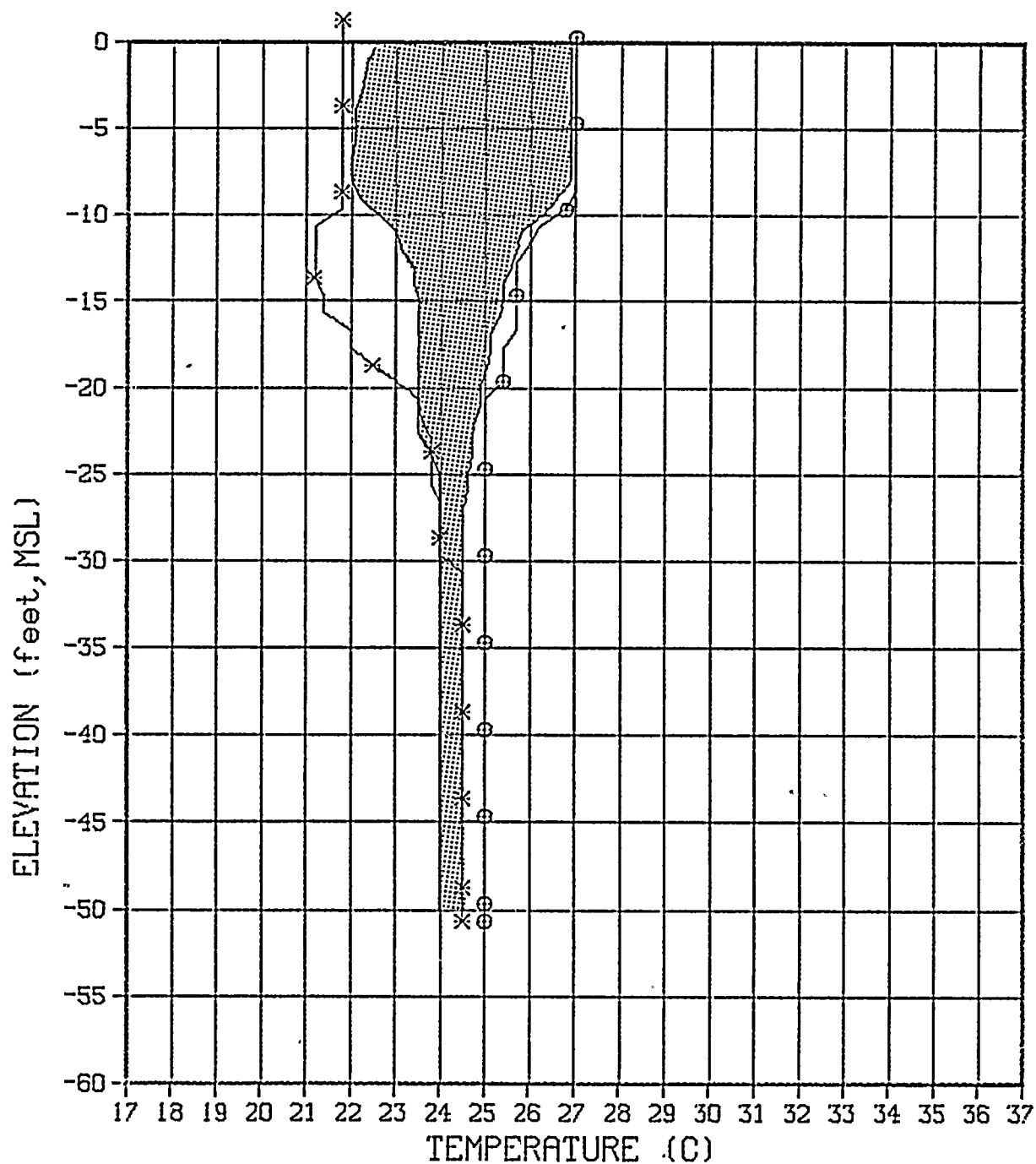
● NOV-80

DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER L-3

0459804726 (7/81) FIGURE 6





LEGEND

x MAR-81

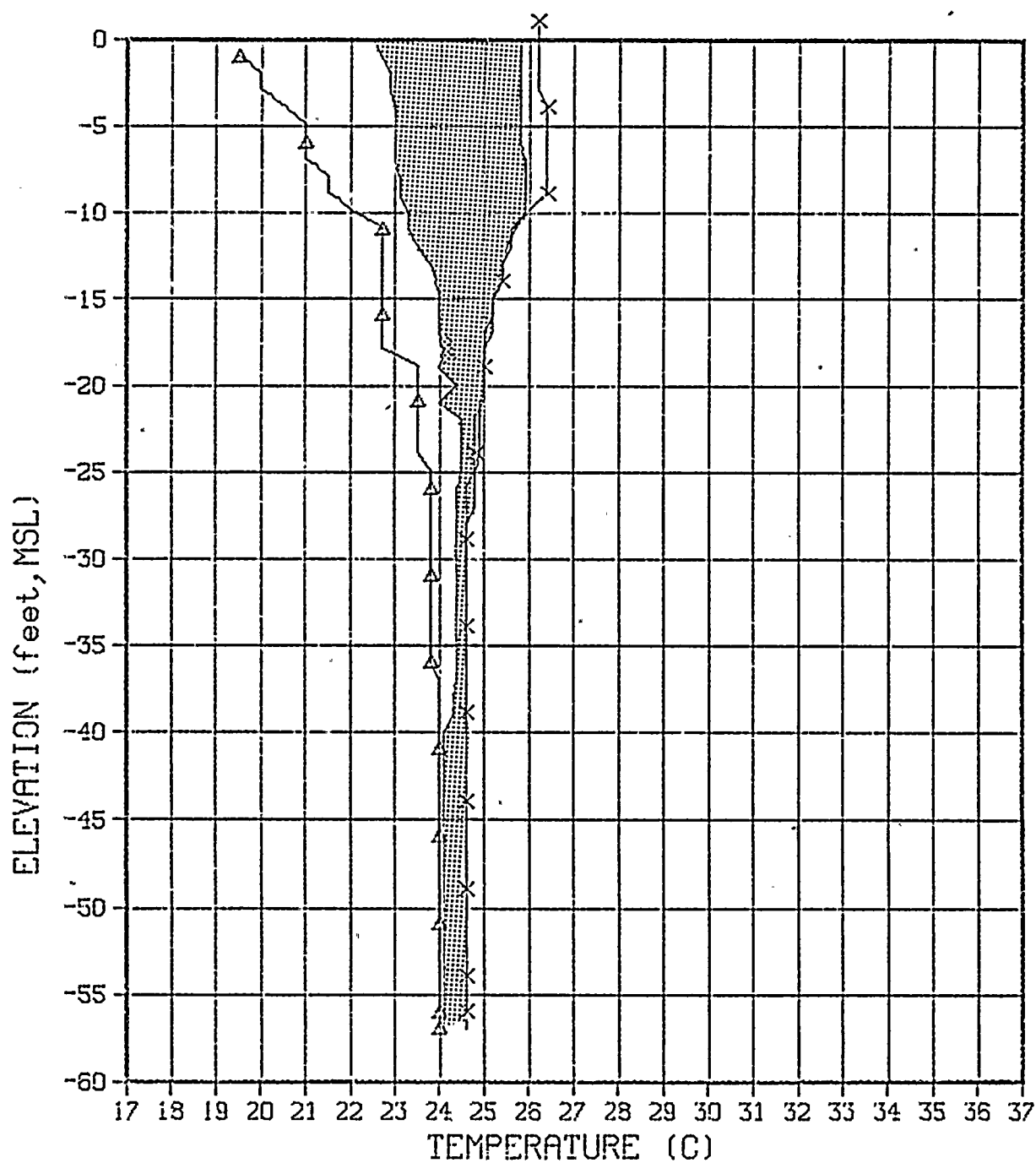
o NOV-80

DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER L-5

0459804726 (7/81) FIGURE 7





LEGEND

△ MAR-81

× NOV-80

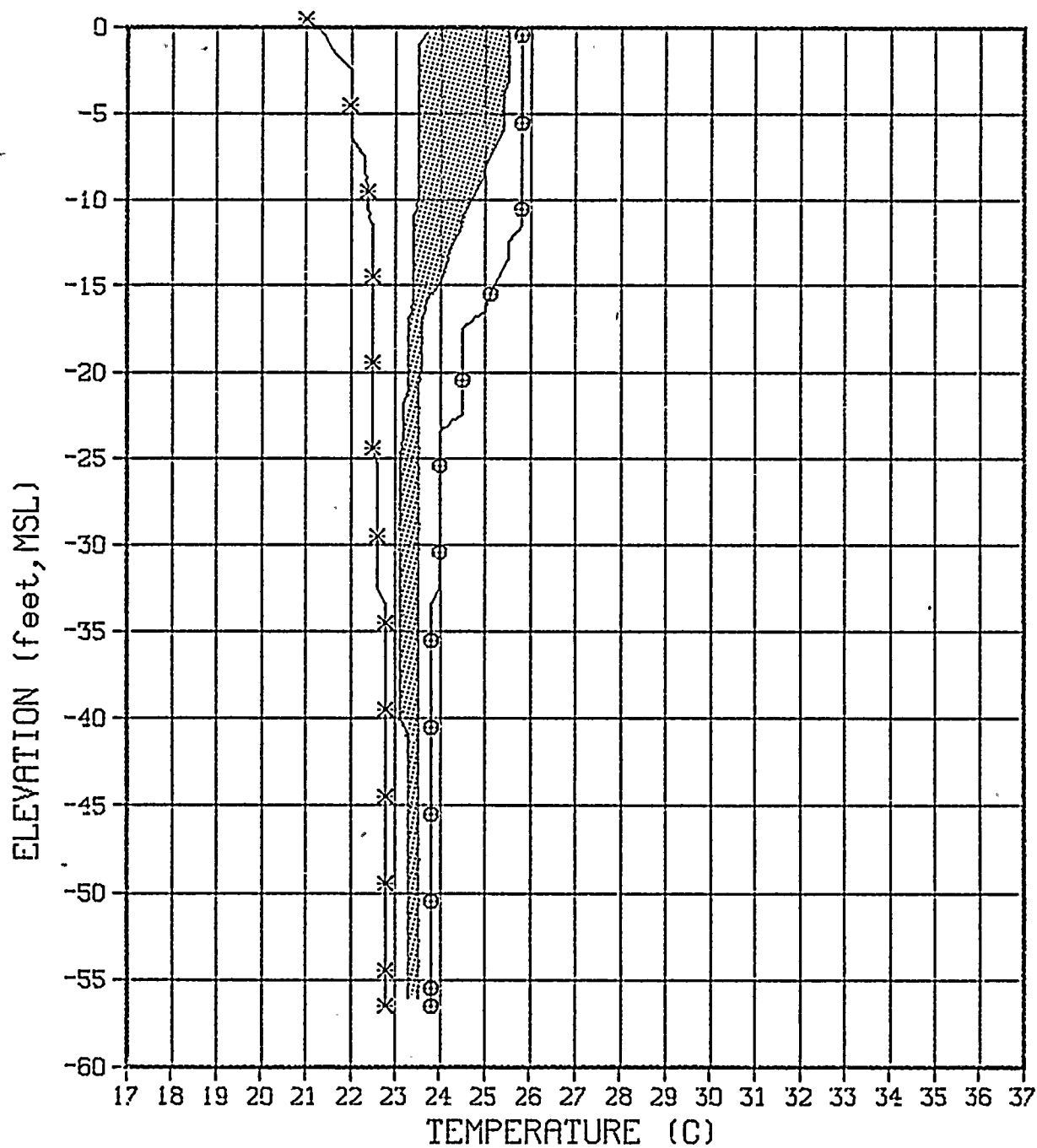
DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-6

0459804726 (7/81) FIGURE 8







# LEGEND

x MAR-81

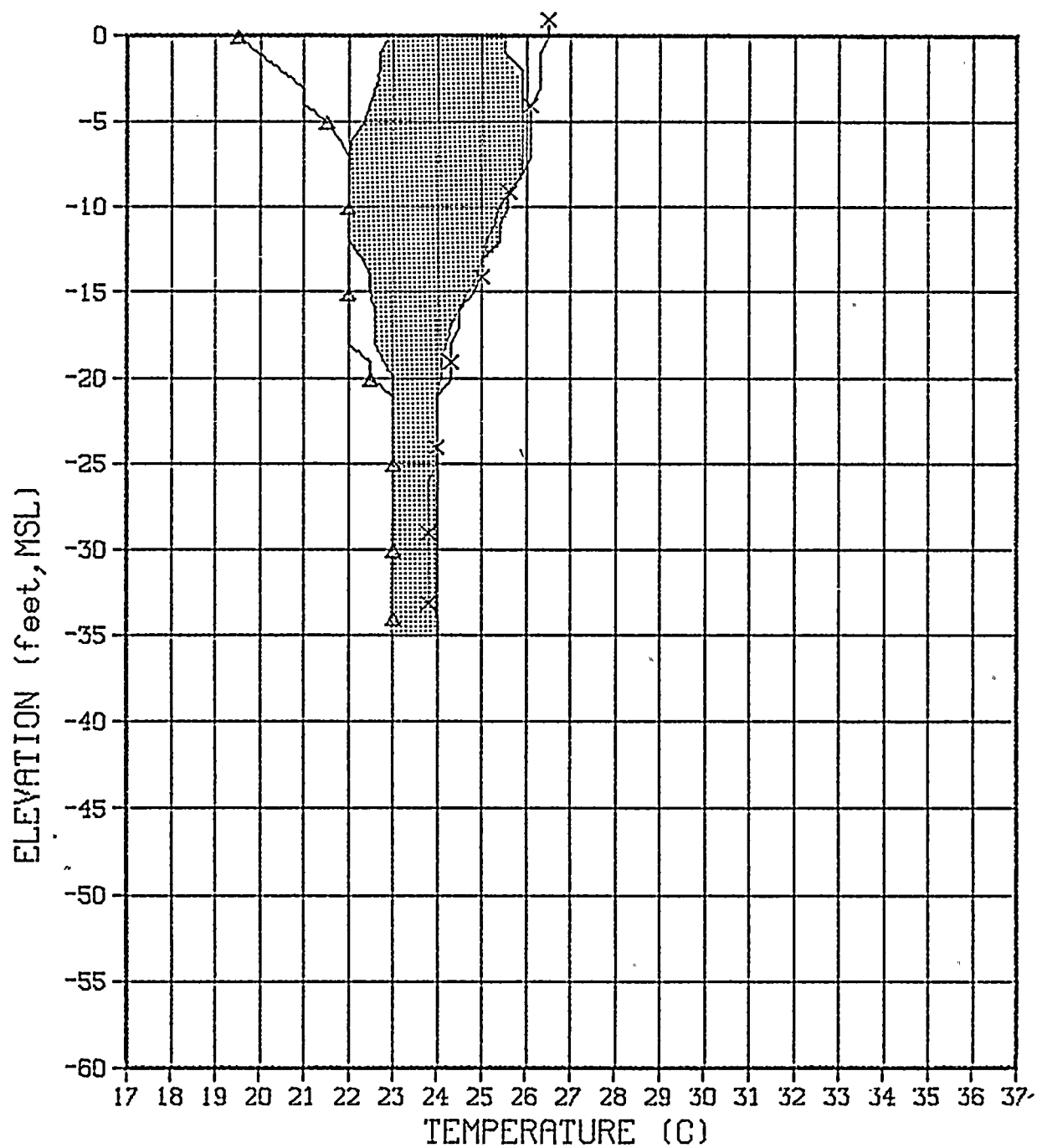
o NOV-80

DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-14

0459804726 (7/81) FIGURE 9





LEGEND

△ MAR-81

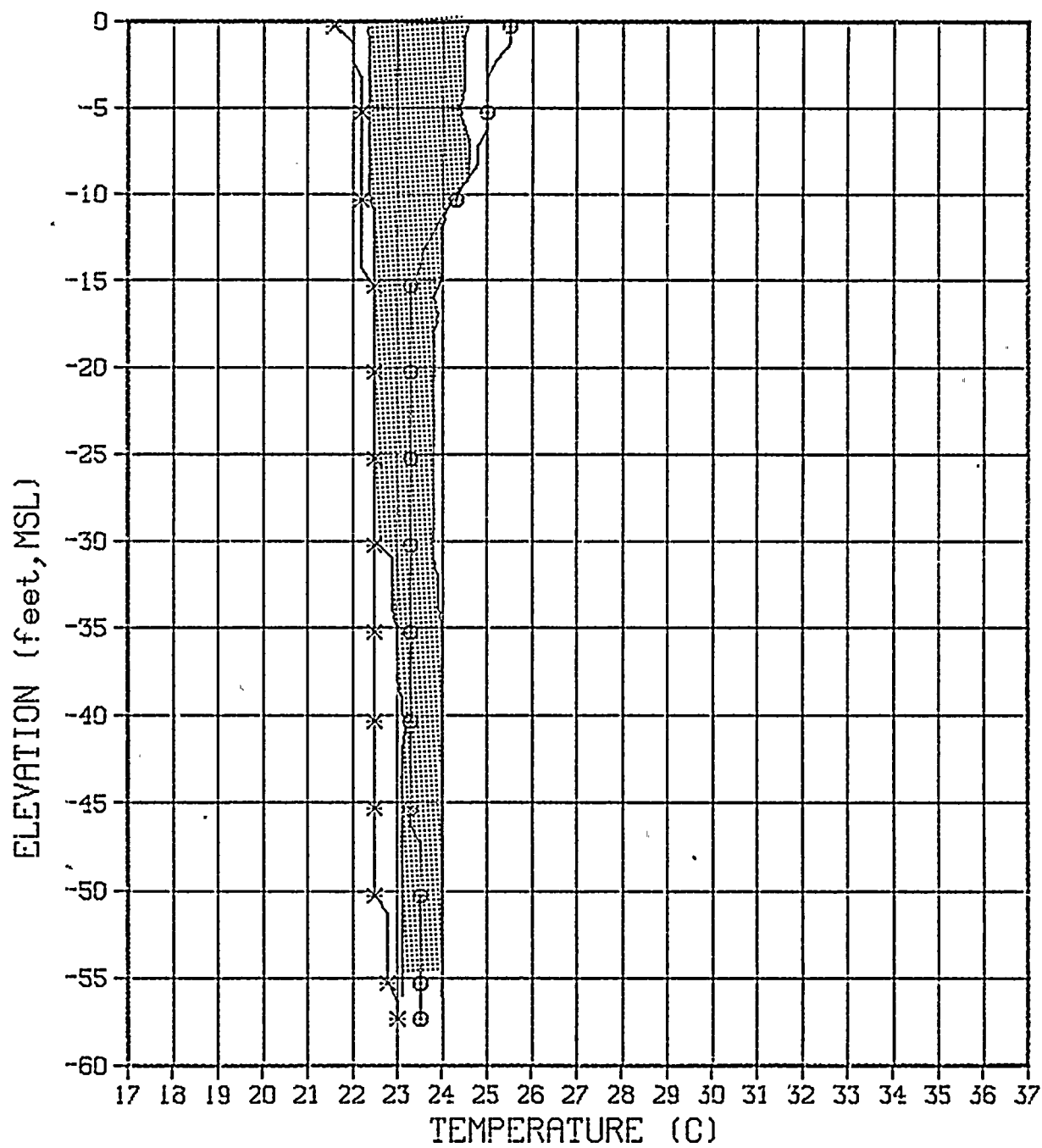
× NOV-80

DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-27

0459804726 (7/81) FIGURE 10





LEGEND

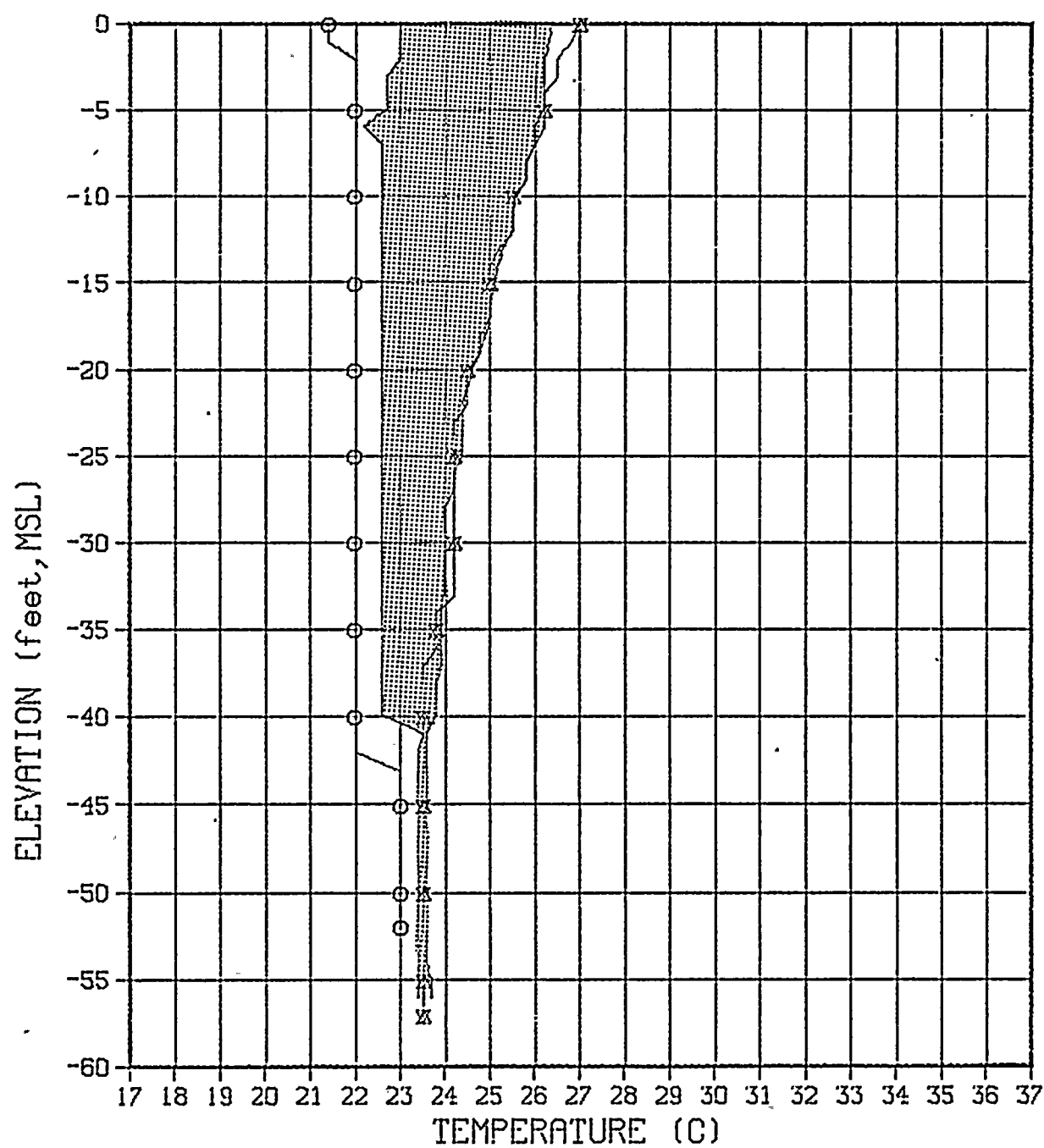
x MAR-81      o NOV-80

DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-28

0459804726 (7/81) FIGURE II





LEGEND

○ APR-81

× OCT-80

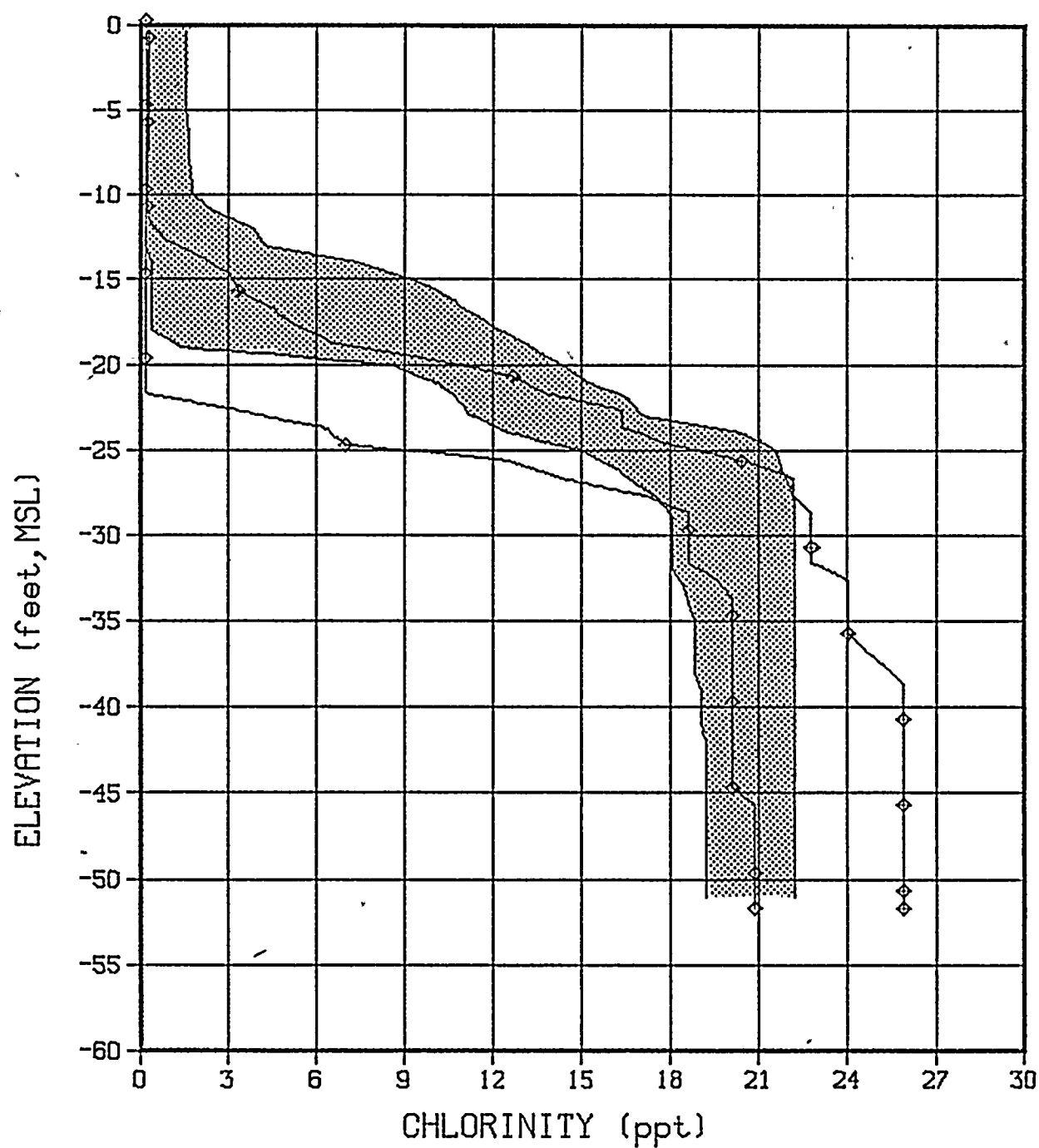
DAMES AND MOORE

EXTREMES OF TEMPERATURE  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-35

0459804726 (7/81) FIGURE 12





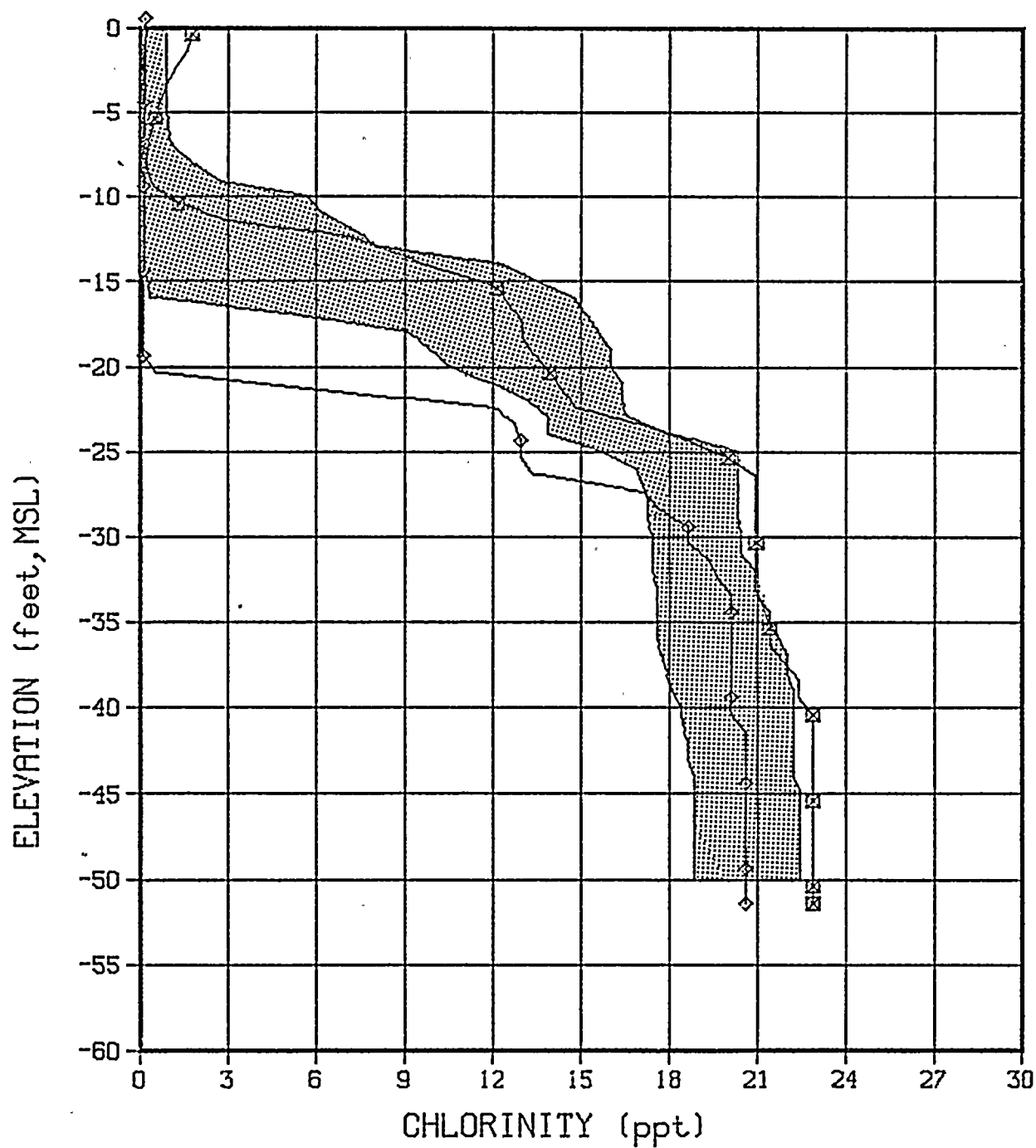


DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81  
WELL NUMBER L-2

0459804726 (7/81) FIGURE 13





LEGEND

◇ JAN-81

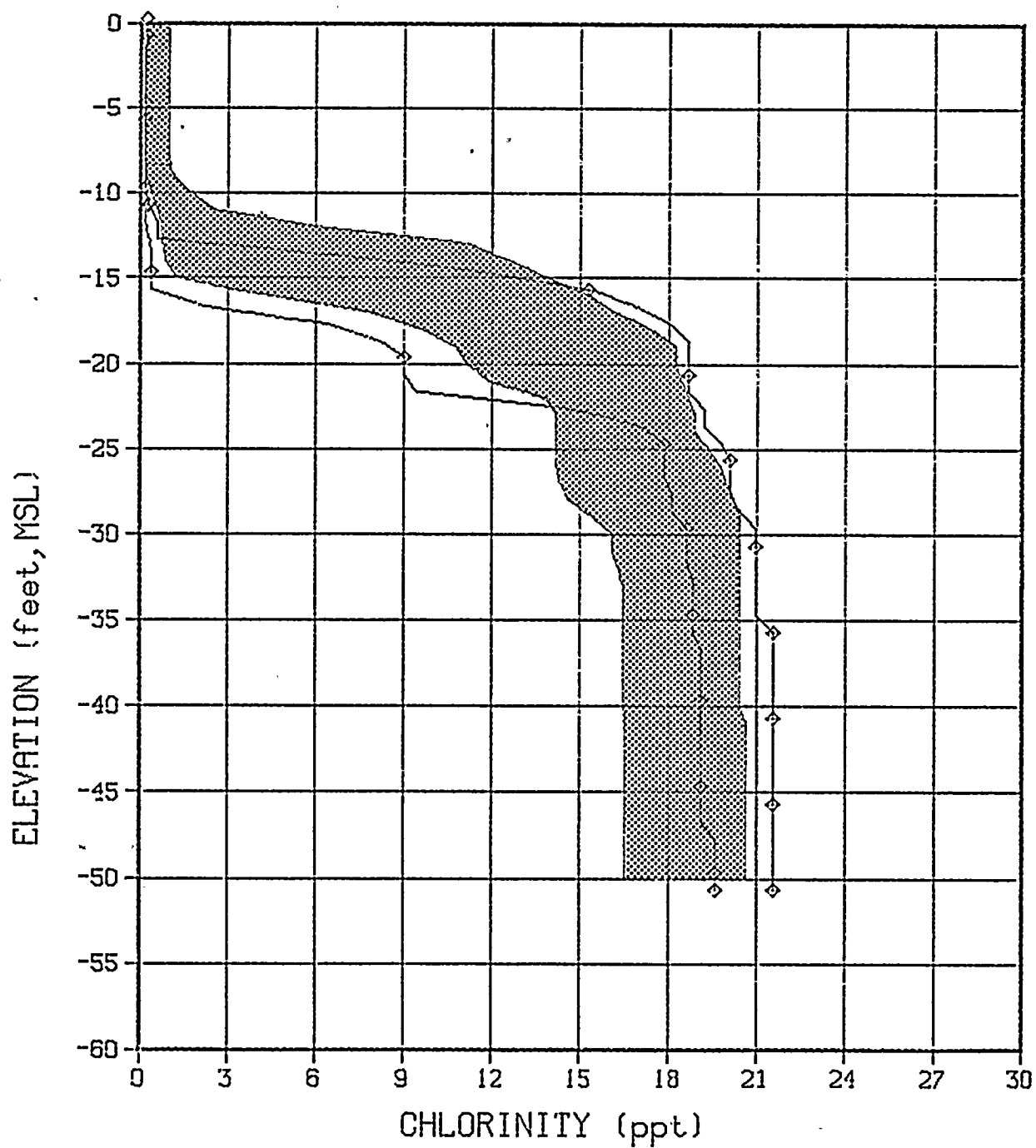
▣ JUN-81

DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81  
WELL NUMBER L-3

0459804726 (7/81) FIGURE 14





LEGEND

◇ JAN-81

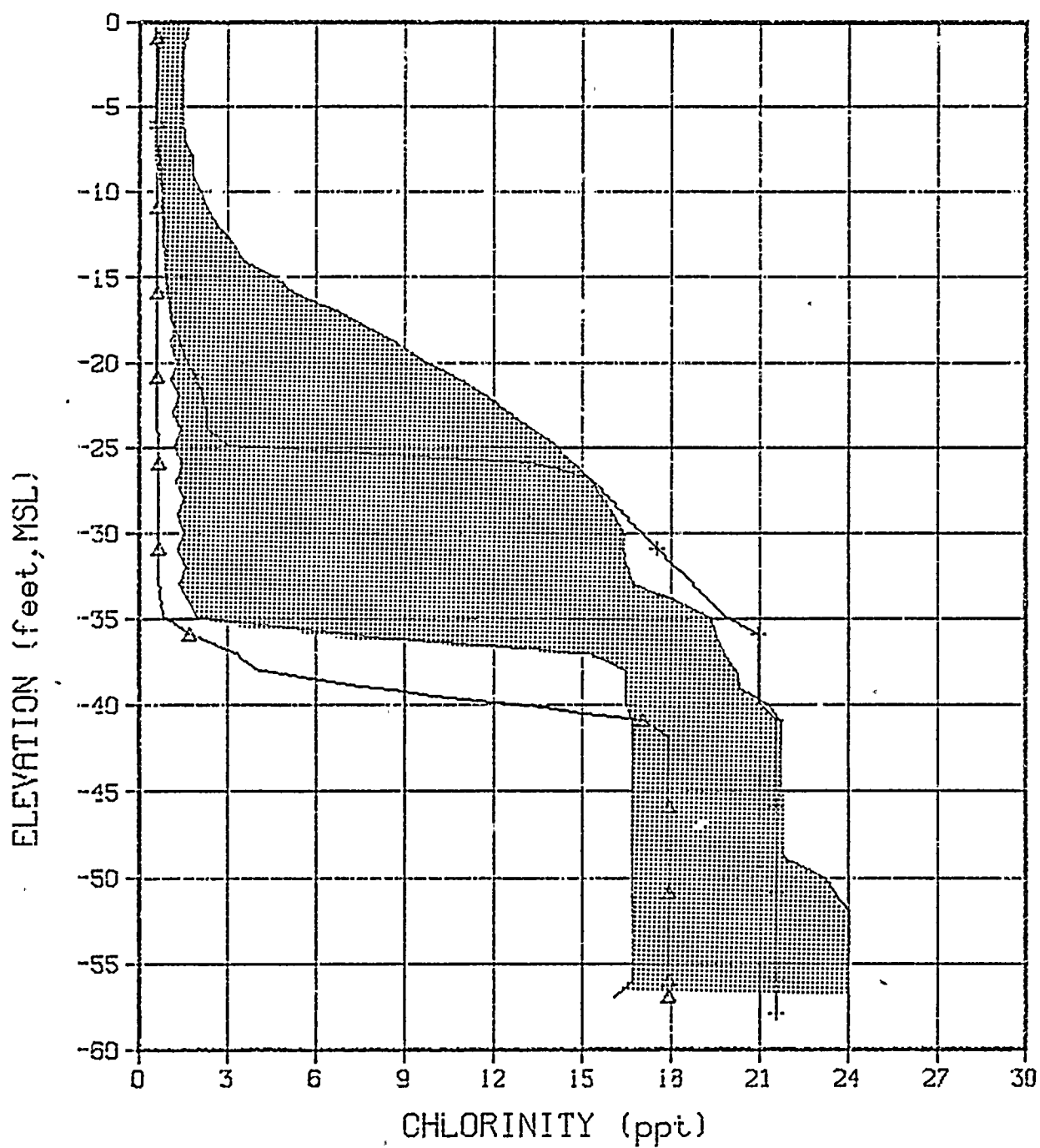
✕ MAY-81

DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81  
WELL NUMBER L-5

0459804726 (7/81) FIGURE 15





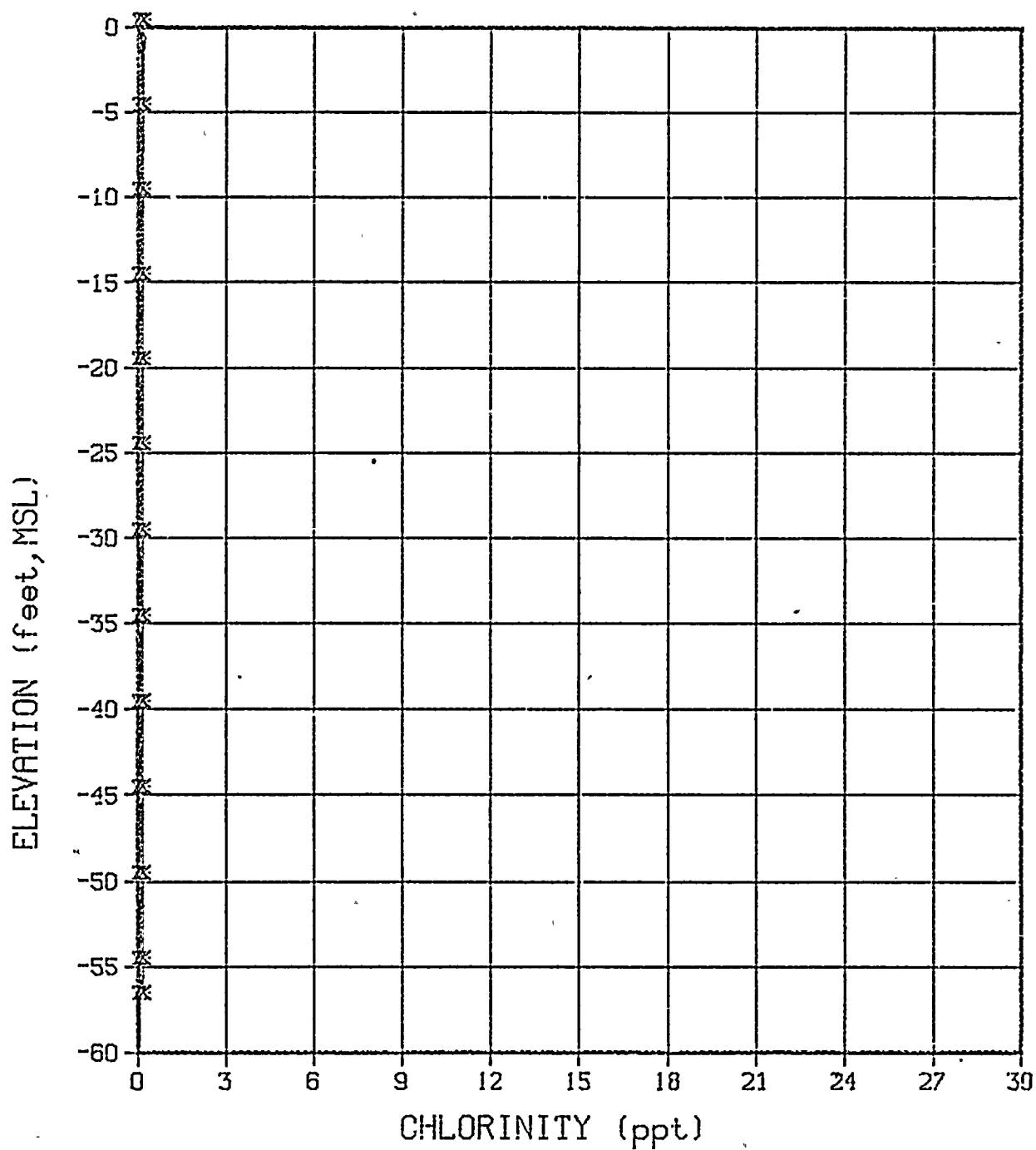
DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-6

0459804726 (7/81) FIGURE 16







LEGEND

× OCT-80

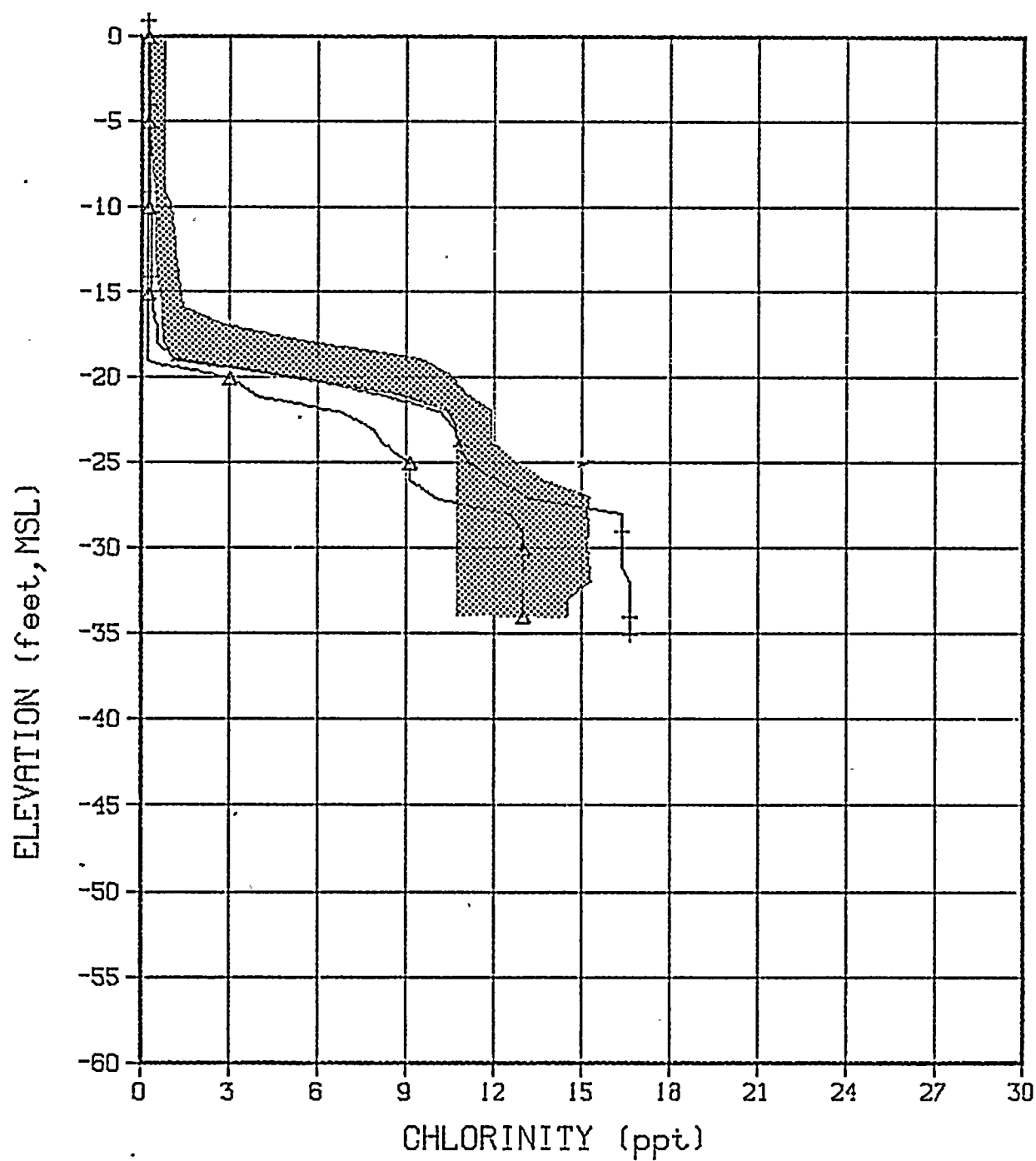
× MAR-81

DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-14

0459804726 (7/81) FIGURE 17





LEGEND

△ MAR-81

+ MAY-81

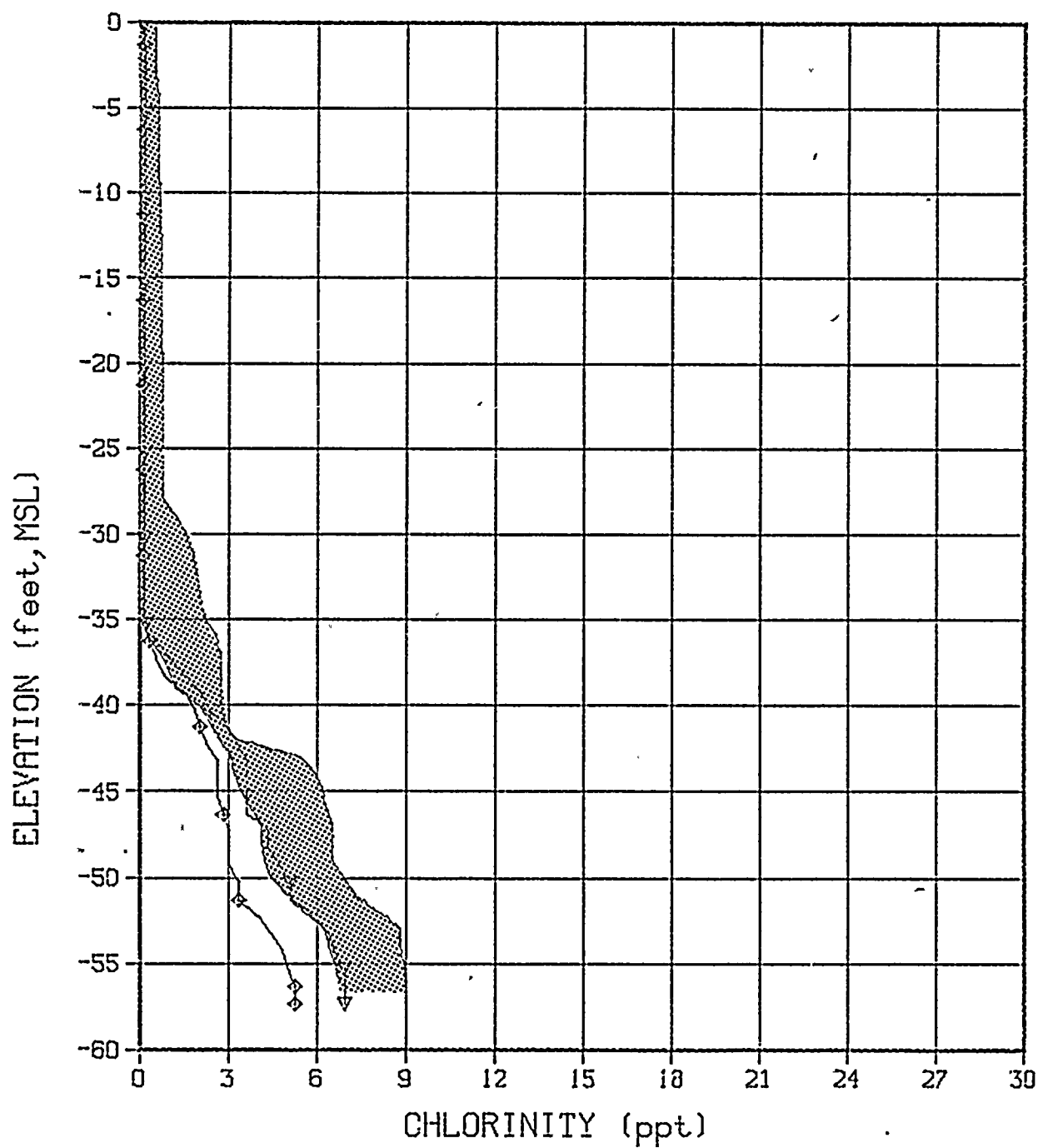
DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81

WELL NUMBER G-27

0459804726 (7/81) FIGURE 18





LEGEND

◇ MAY-81

▽ JUL-80

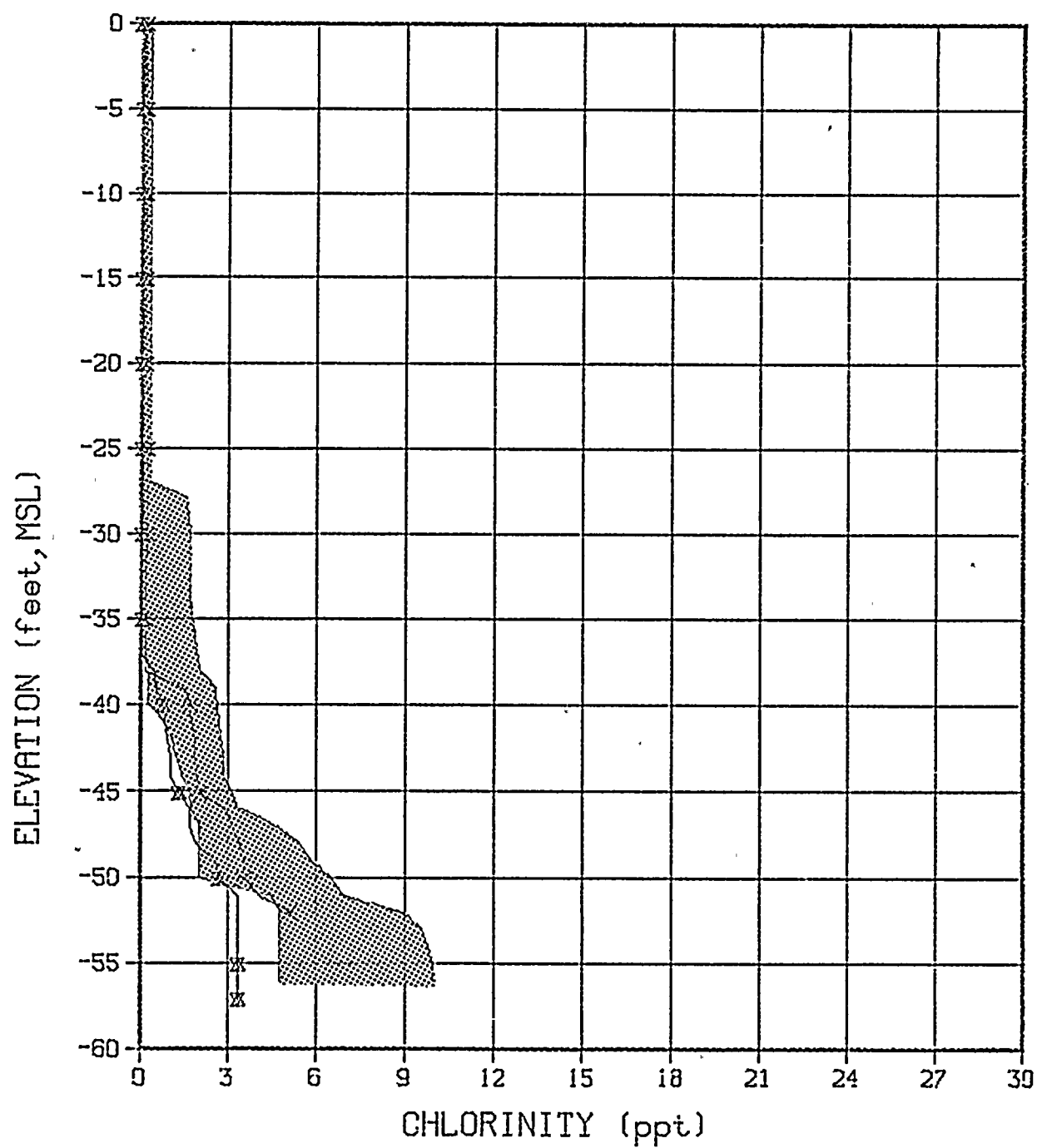
DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81

WELL NUMBER G-28

0459804726 (7/81) FIGURE 19





LEGEND

x OCT-80

x MAR-81

DAMES AND MOORE

EXTREMES OF CHLORINITY  
FOR JULY 80 - JUNE 81  
WELL NUMBER G-35

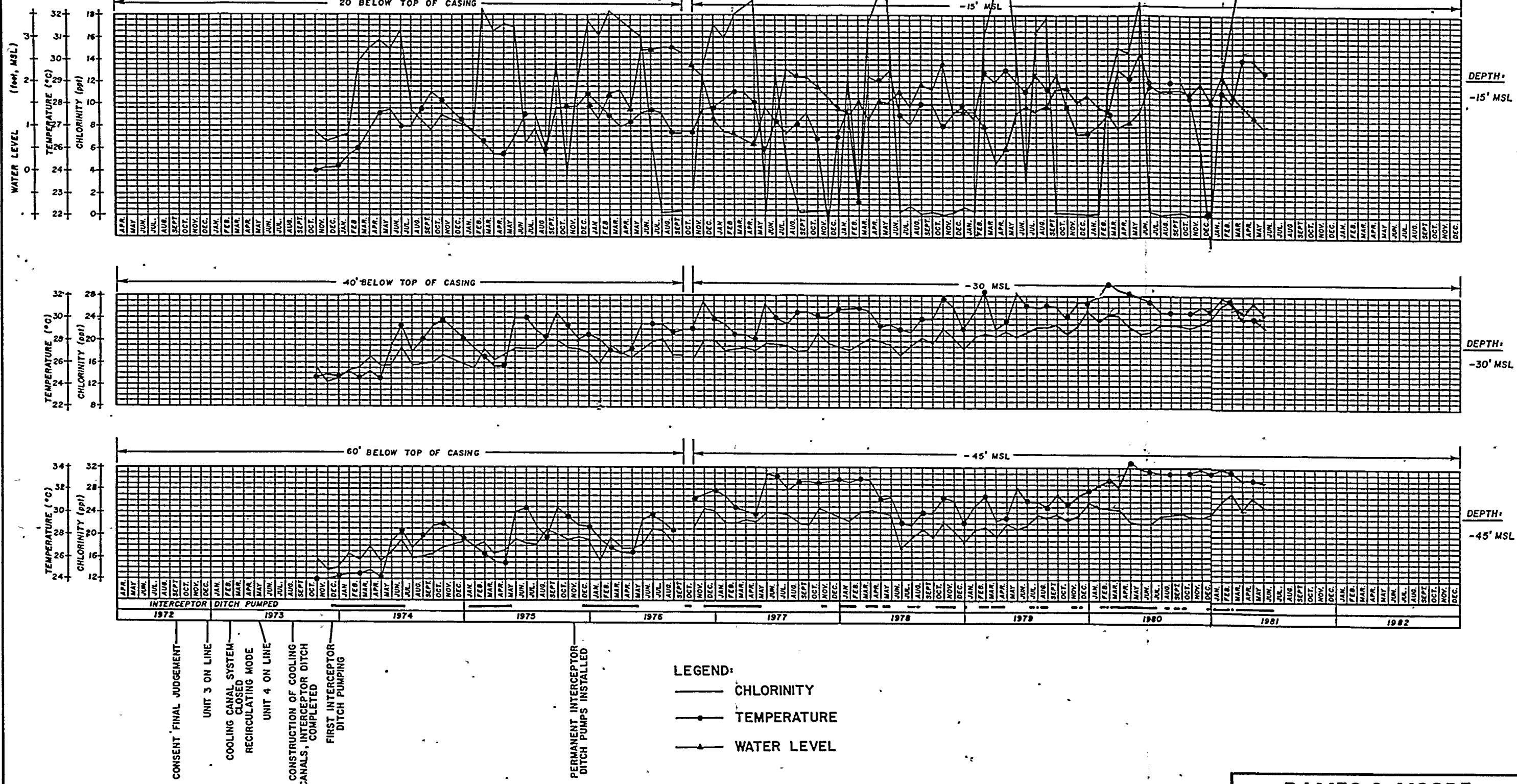
0459804726 (7/81) FIGURE 20





APPENDIX A  
TIME-HISTORY DATA

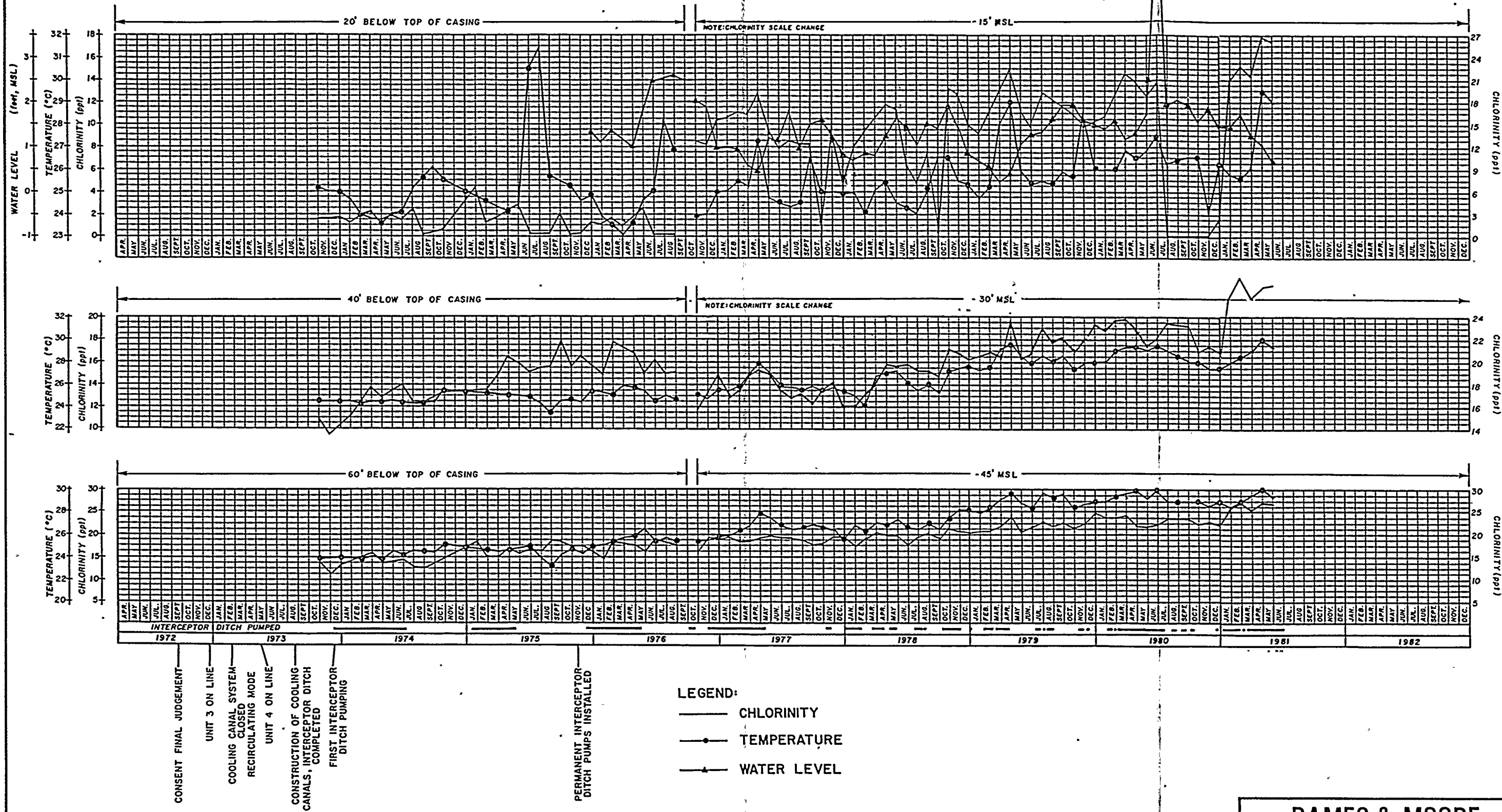




DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER ID-A



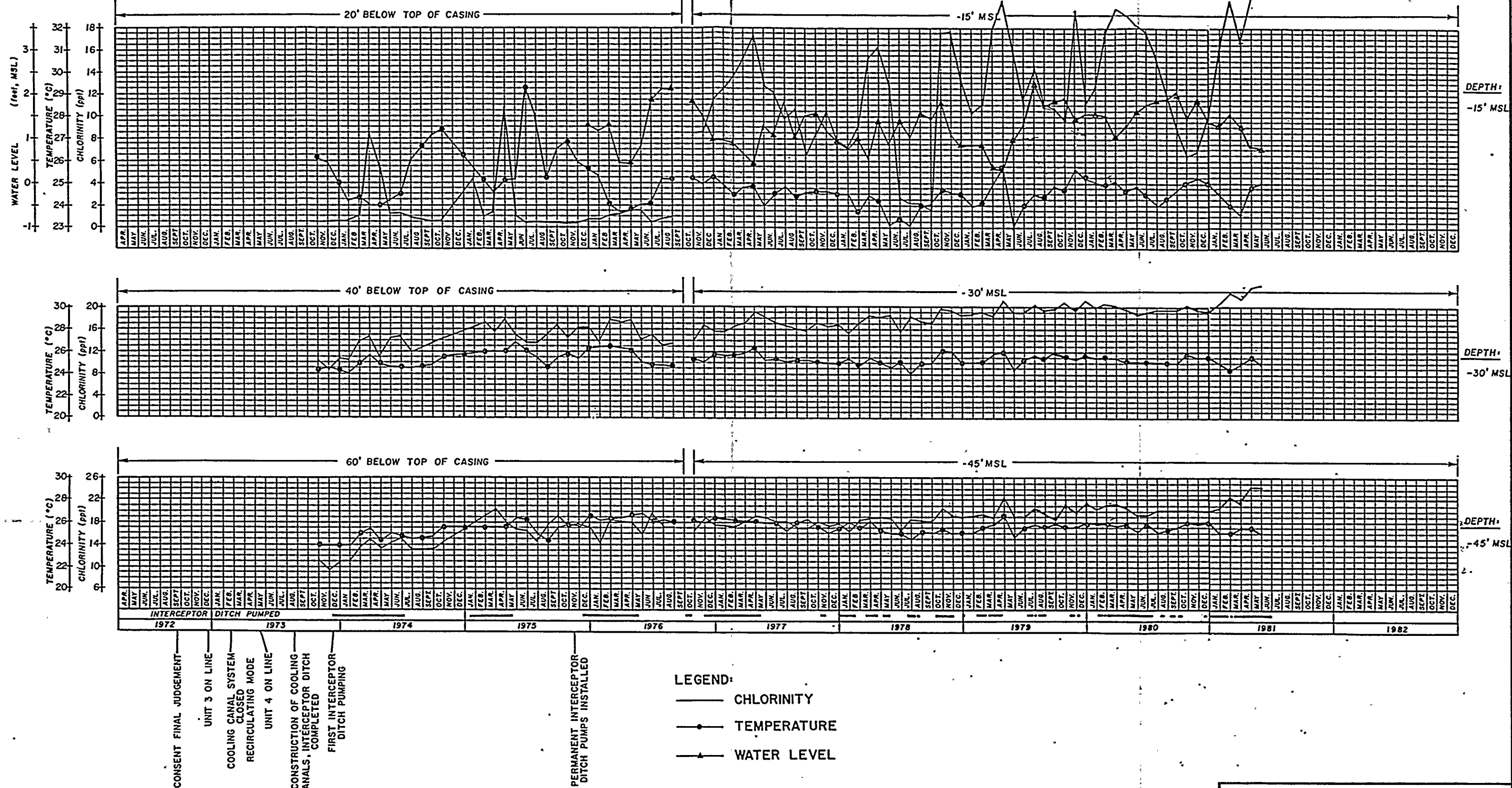


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER ID-C

0459804726 (7/81)



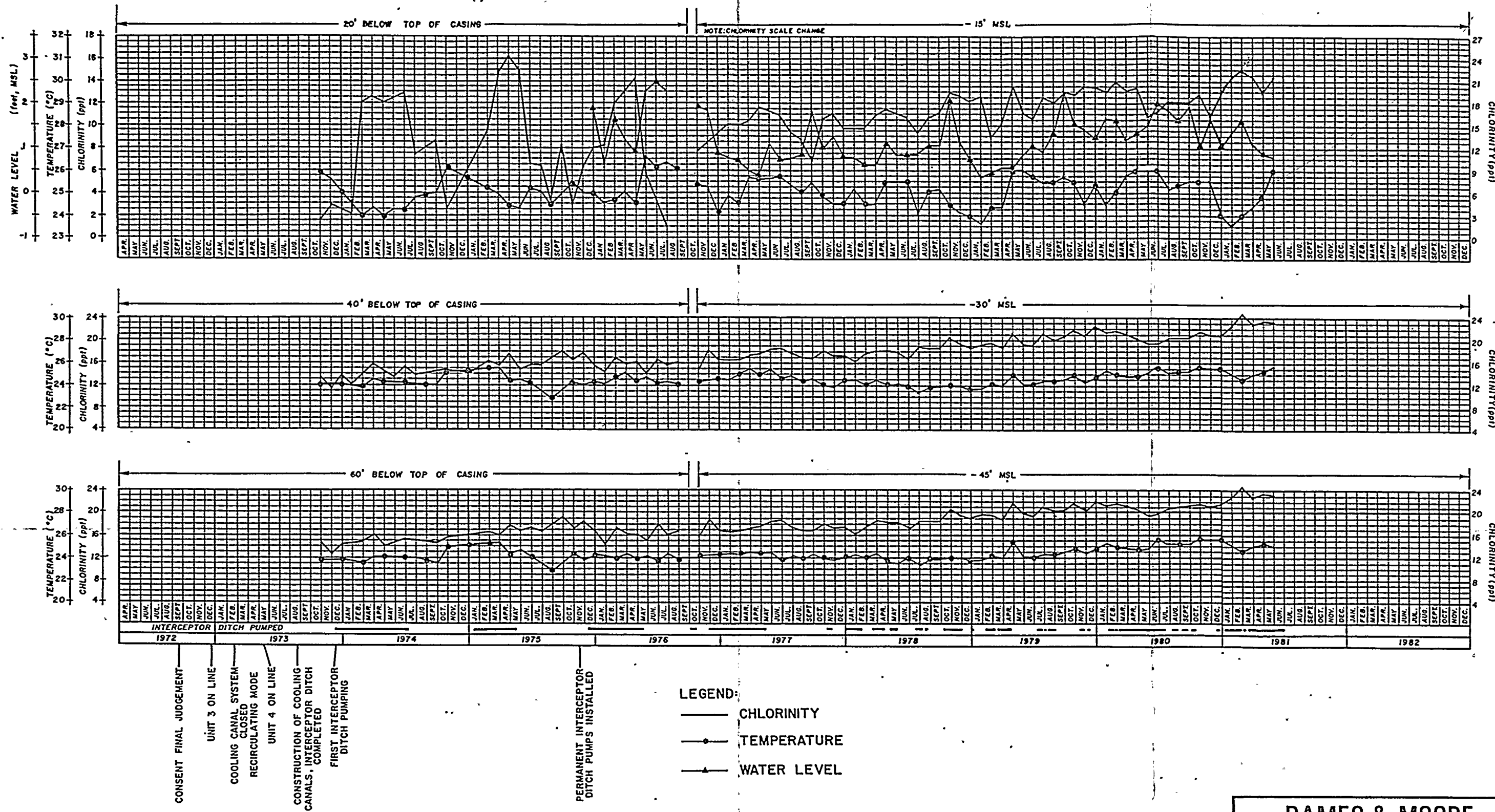


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER ID-D





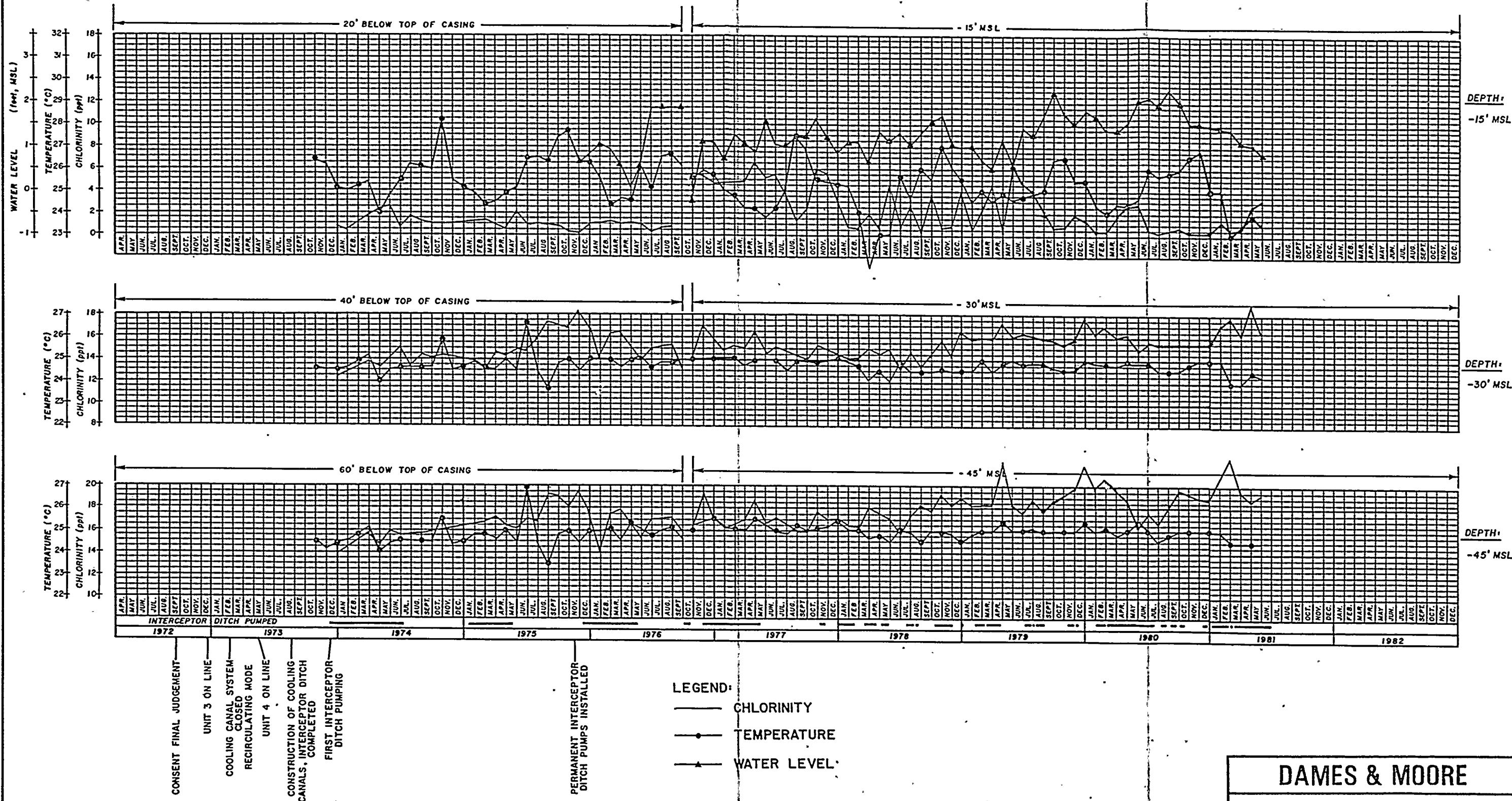


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER ID-E

0459804726 (7/81)

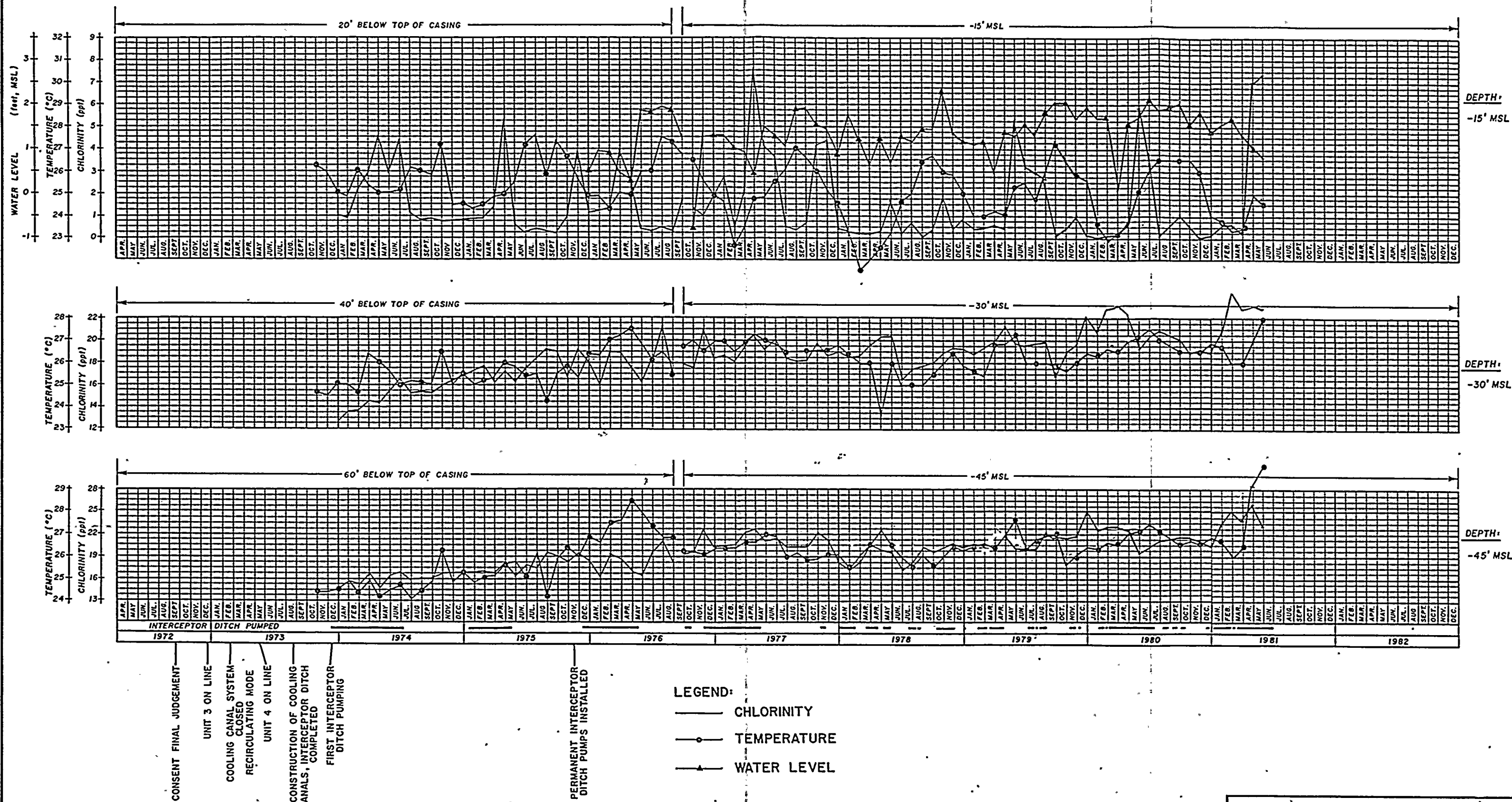




DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER L-1





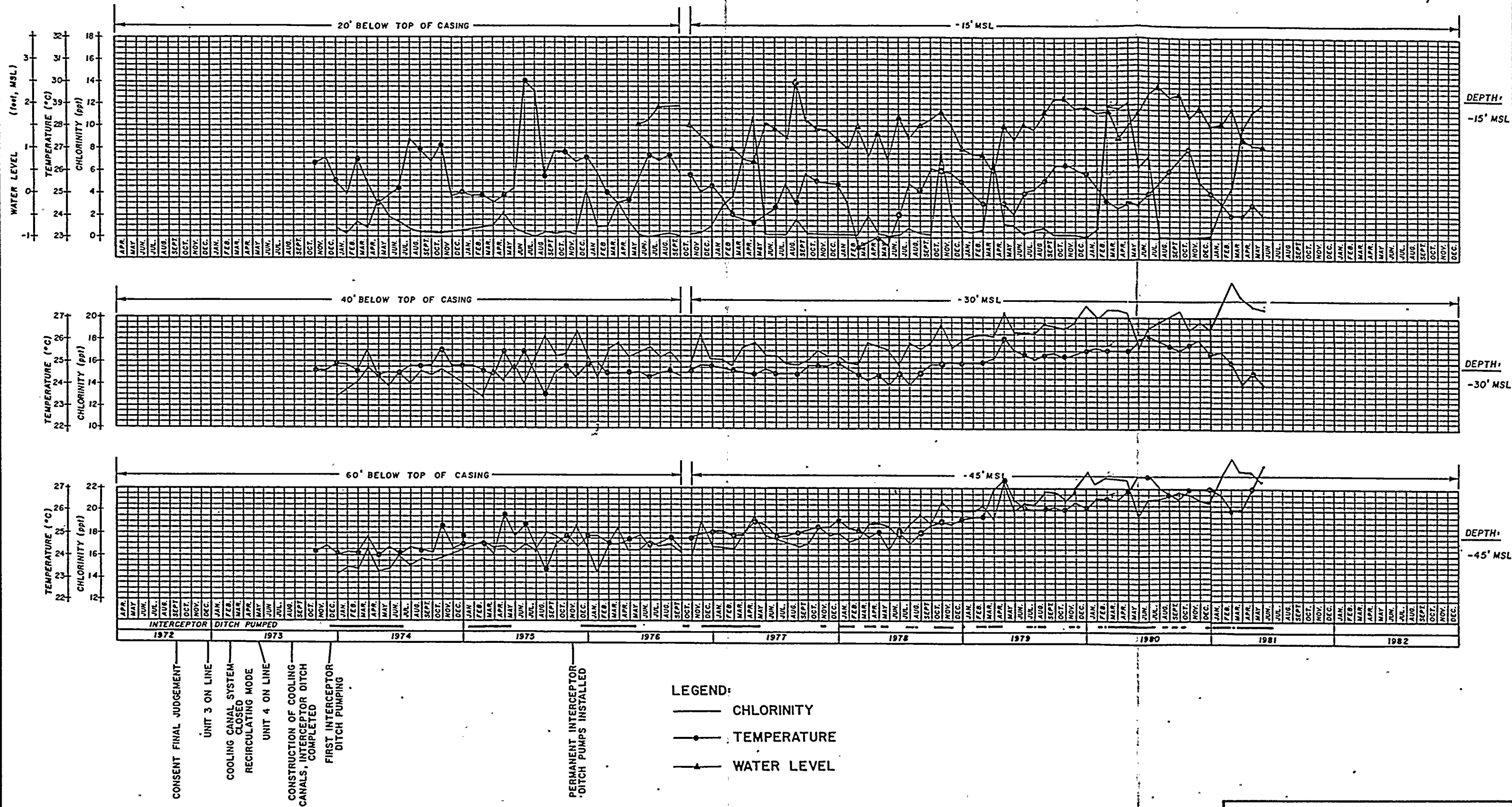
DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER L-2

0459804726 (7/81)







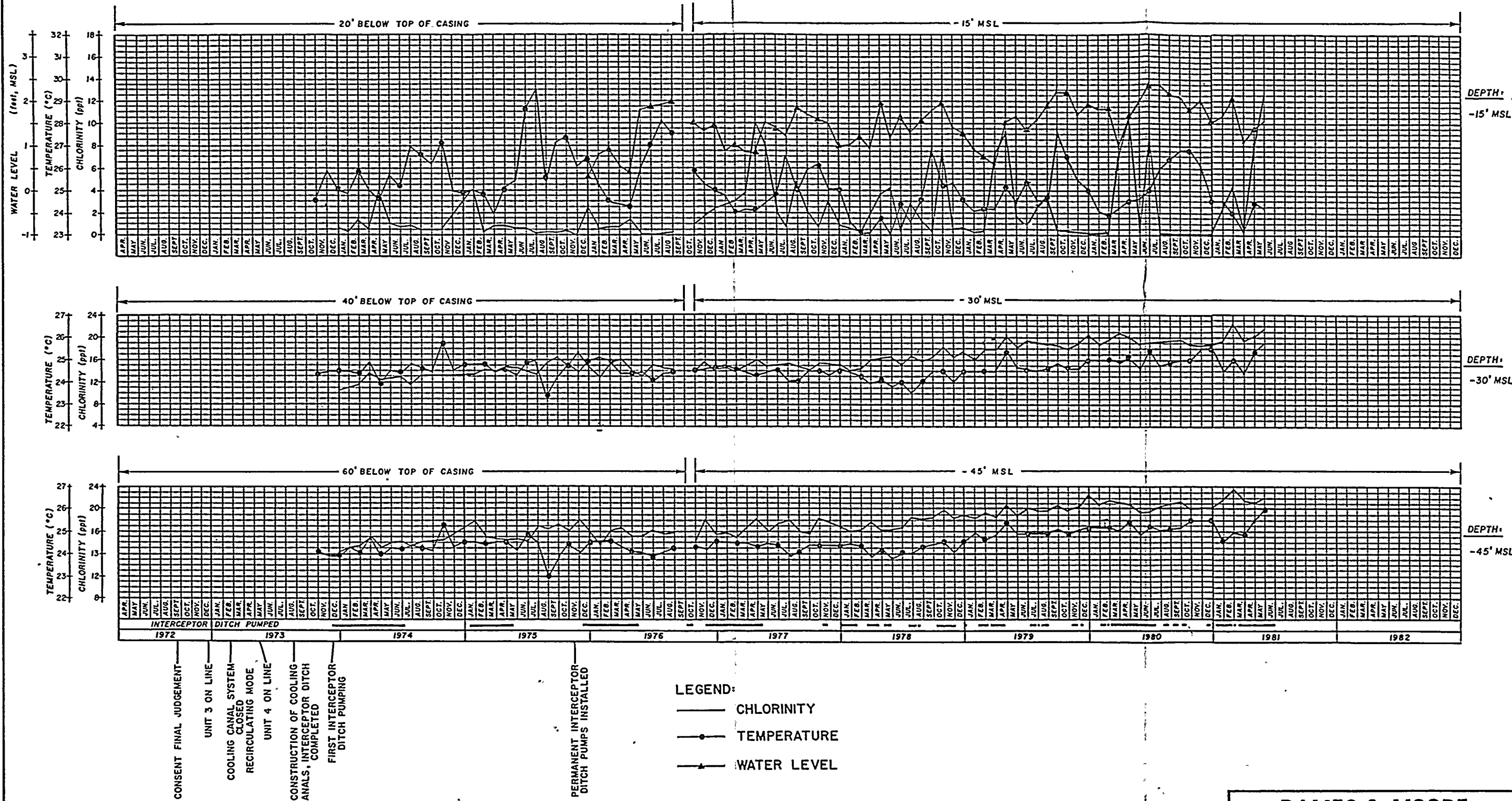
DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER L-3

0459804726 (7/81)



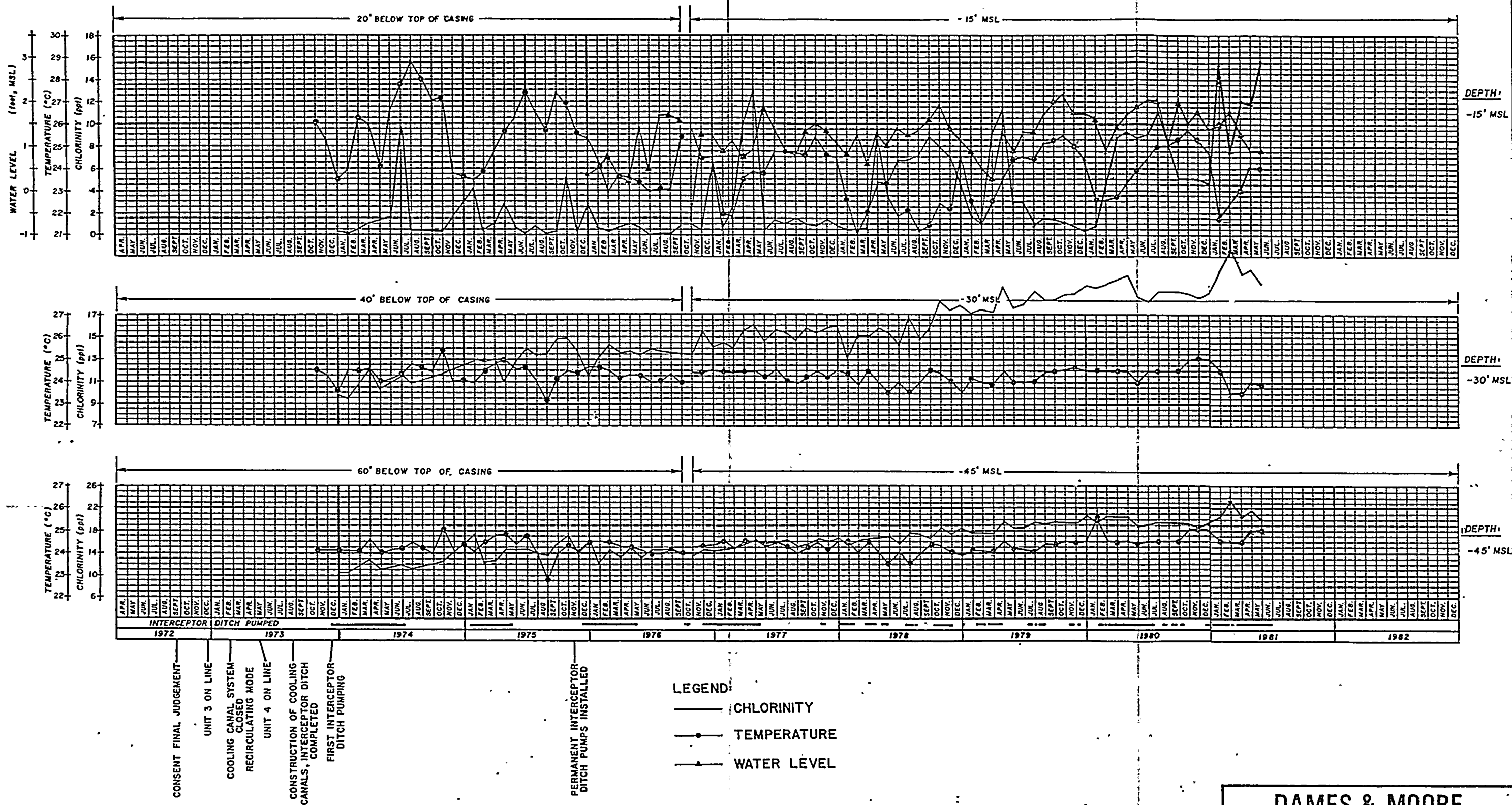




DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER L-4



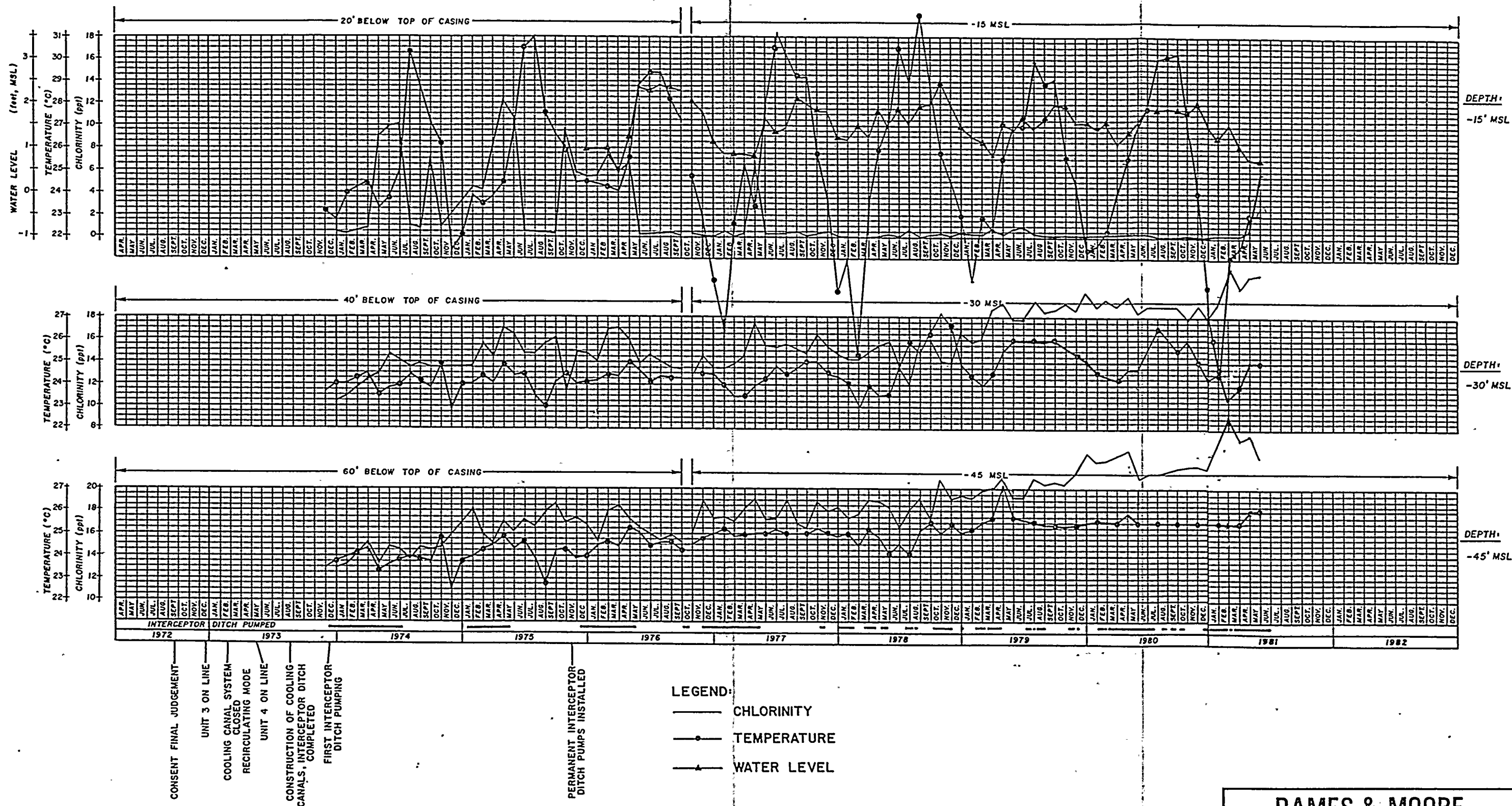


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER L-5

0459804726 (7/81)





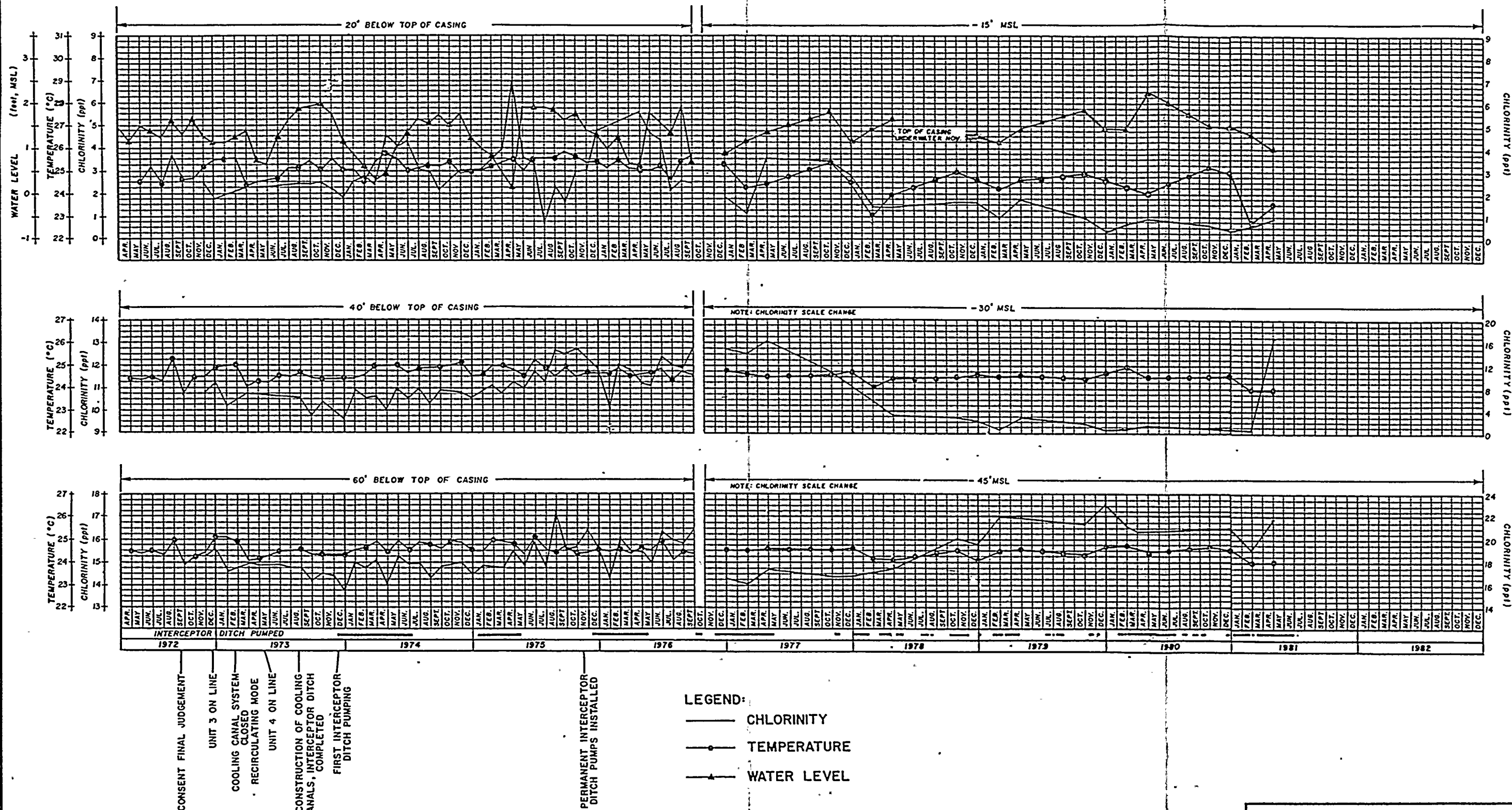
DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER L-6

0459804726 (7/81)







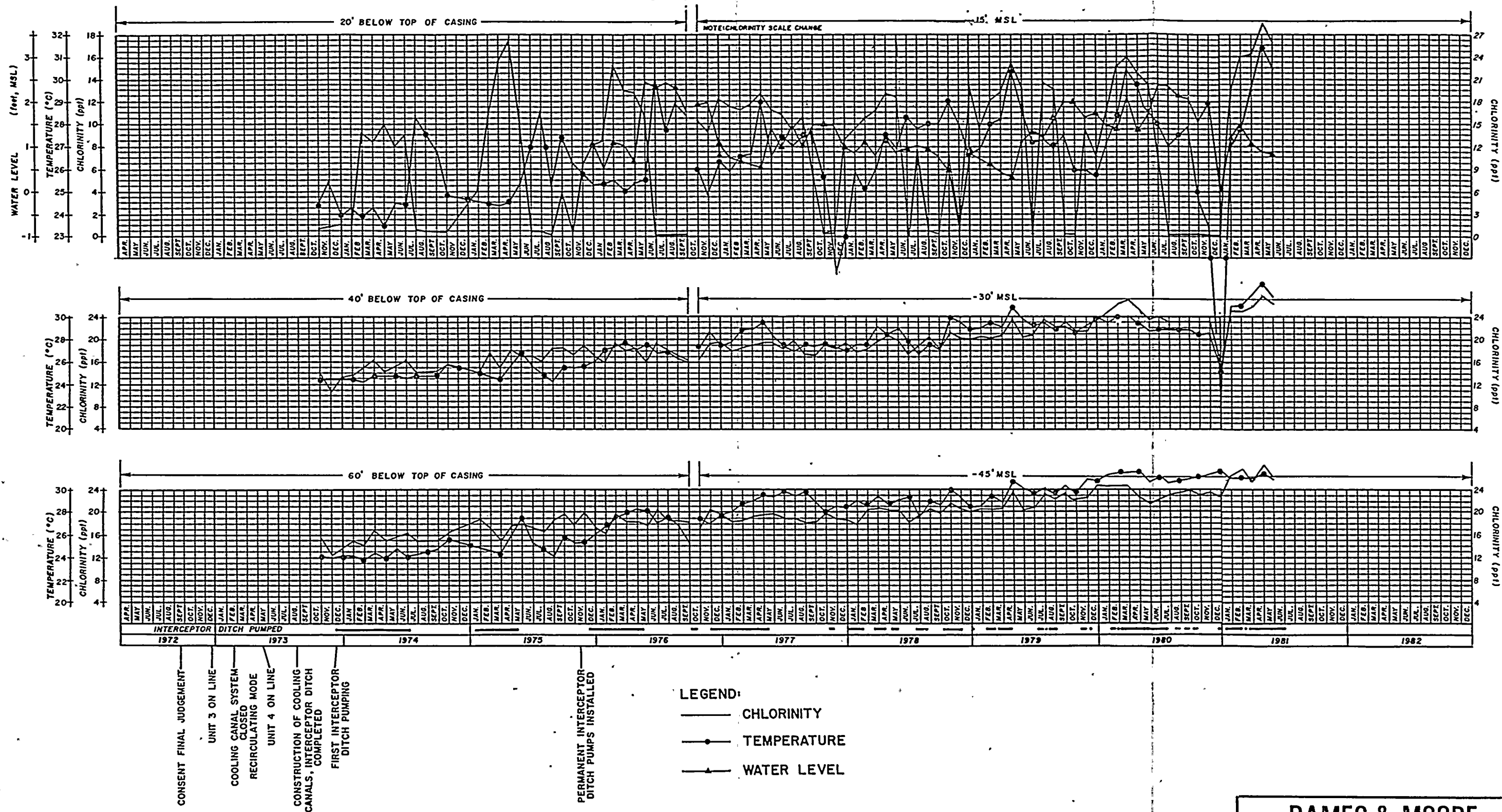
DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER G-6

045900A726 (7/81)





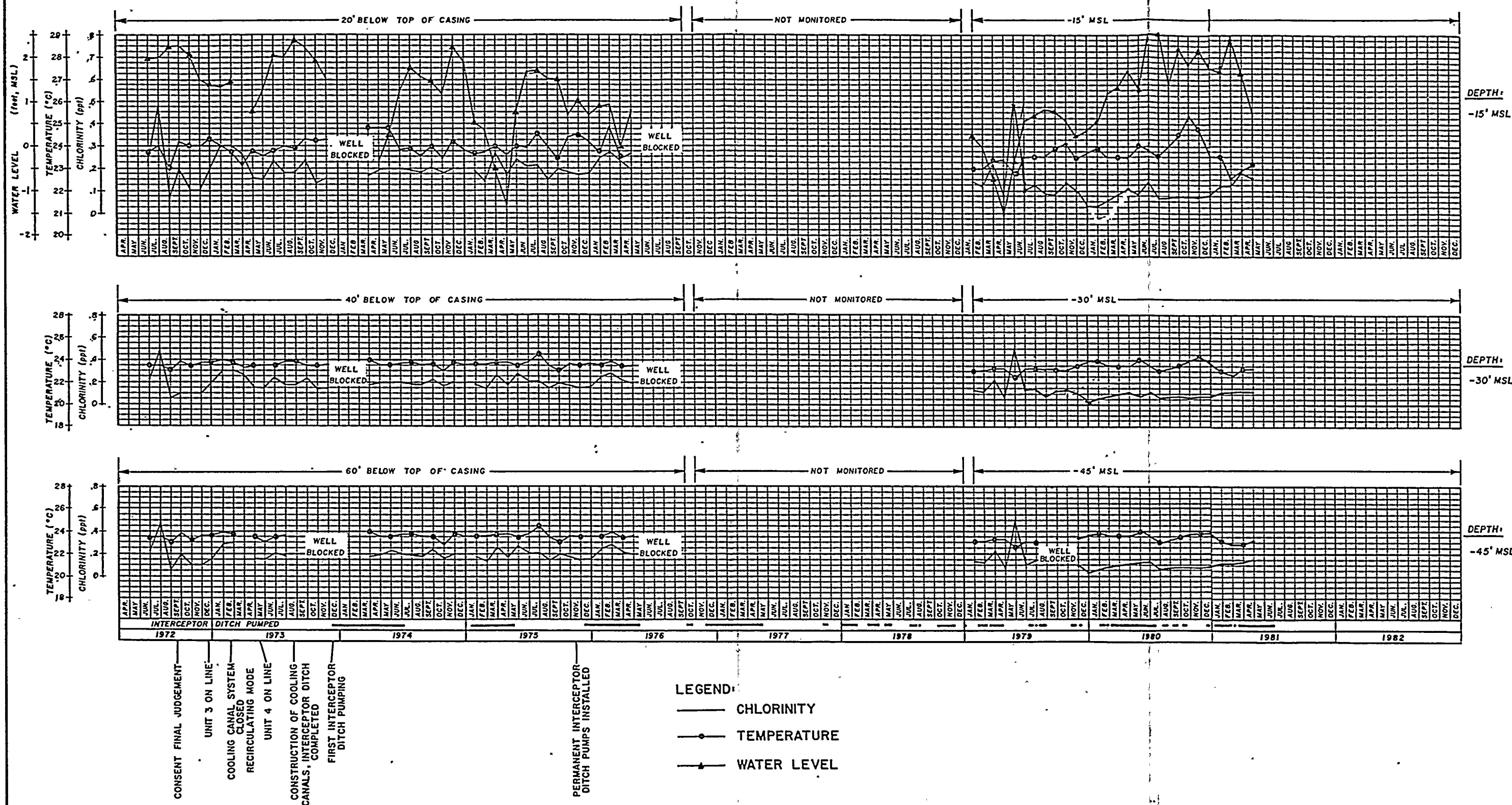


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER ID-B

0459804726 (7/81)



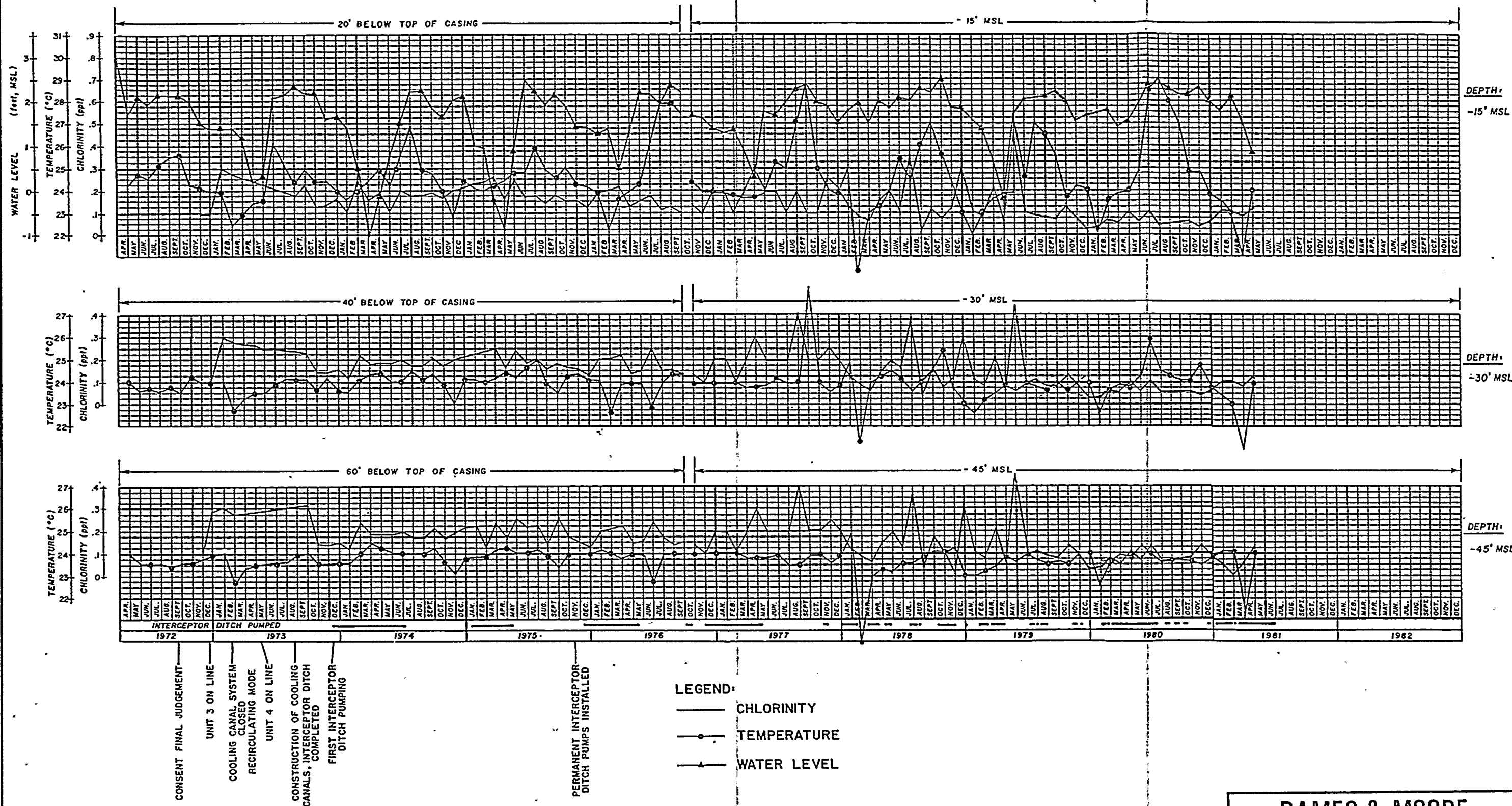


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER G-14

0459804726 (7/81)





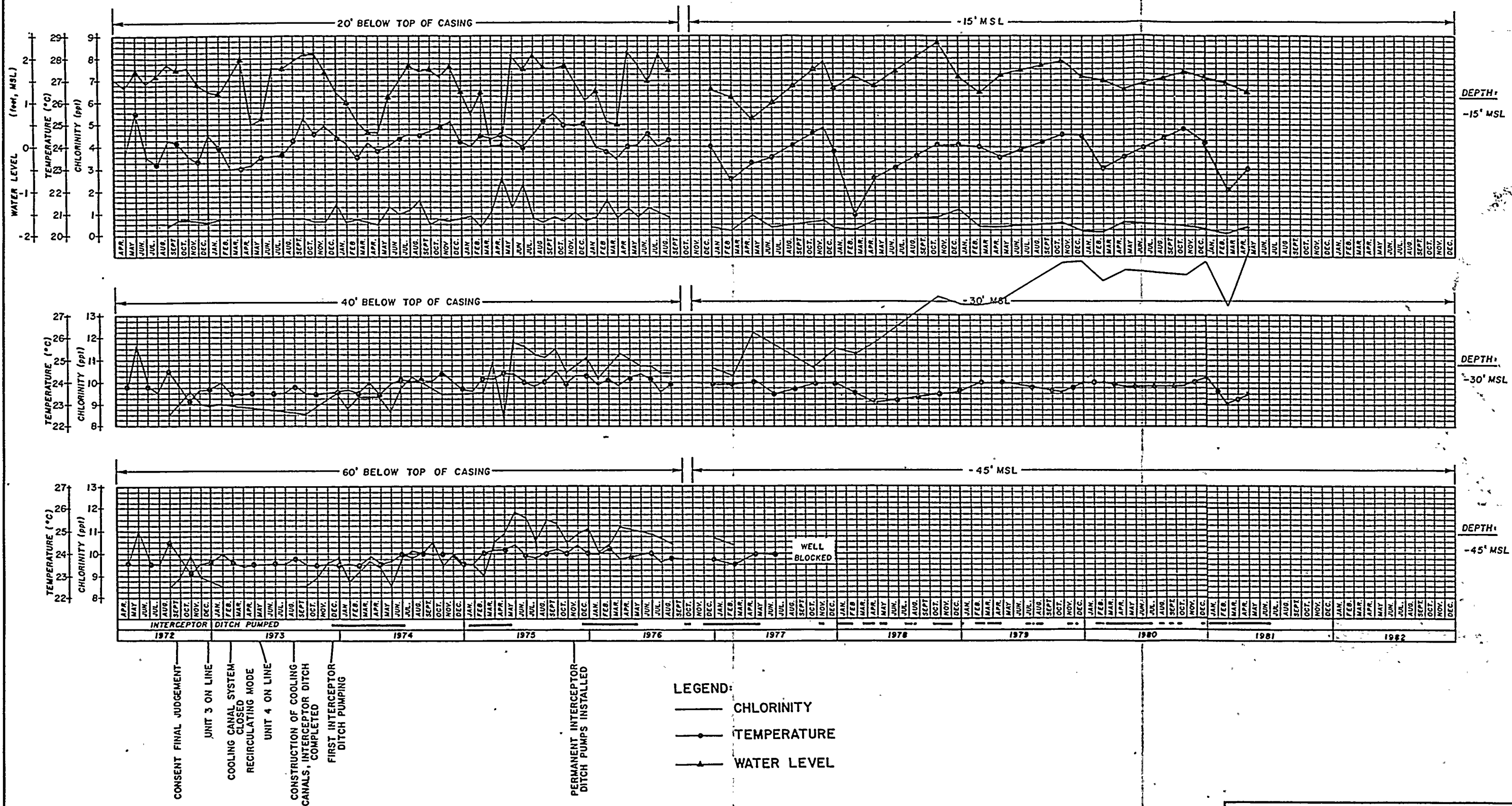
DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER G-21

0459804726 (7/81)





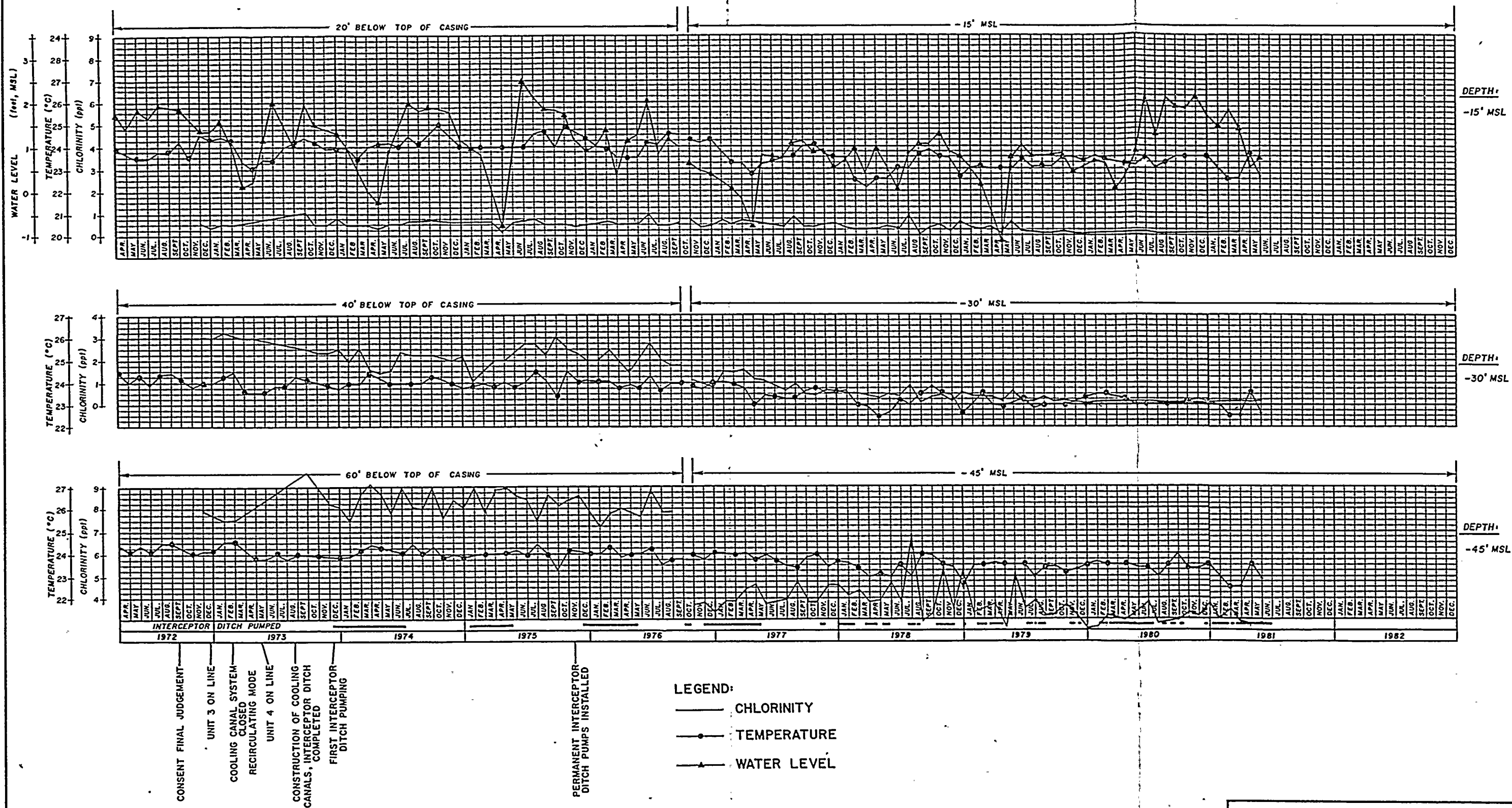


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER G-27





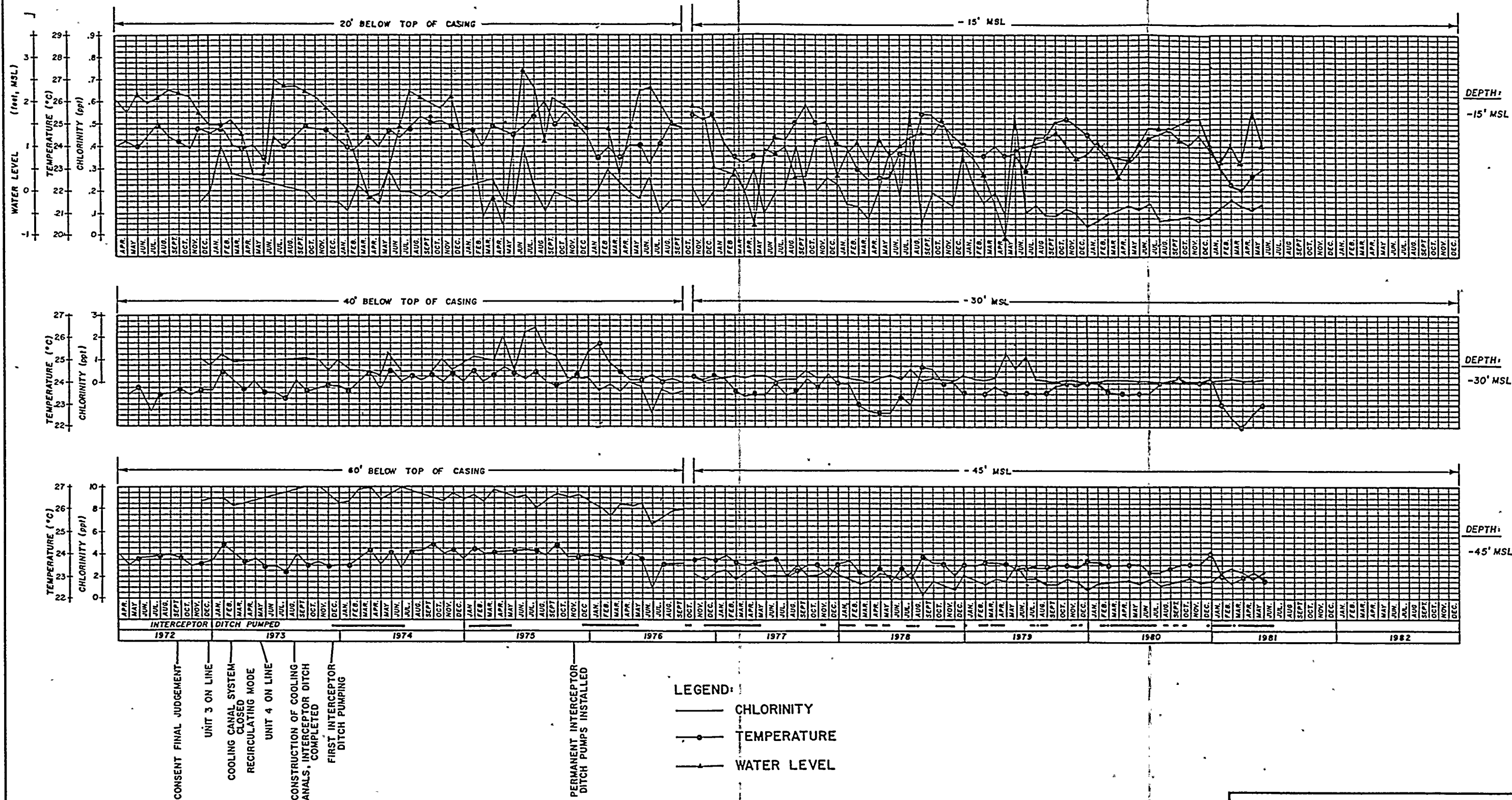


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER G-28

0459804726 (7/81)



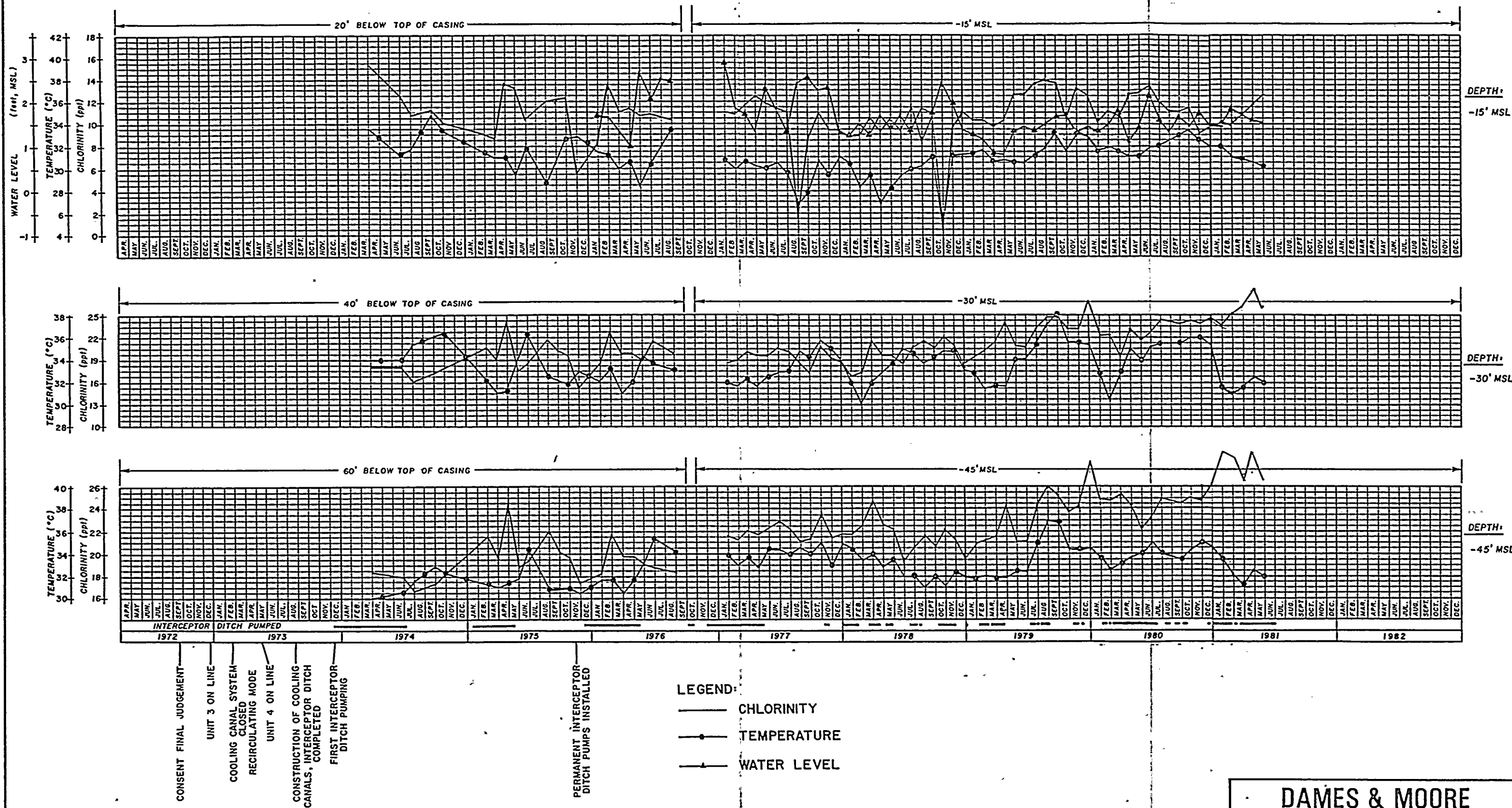


DAMES & MOORE

TIME-HISTORY PLOTS  
WELL NUMBER G-35

0459804726 (7/81)





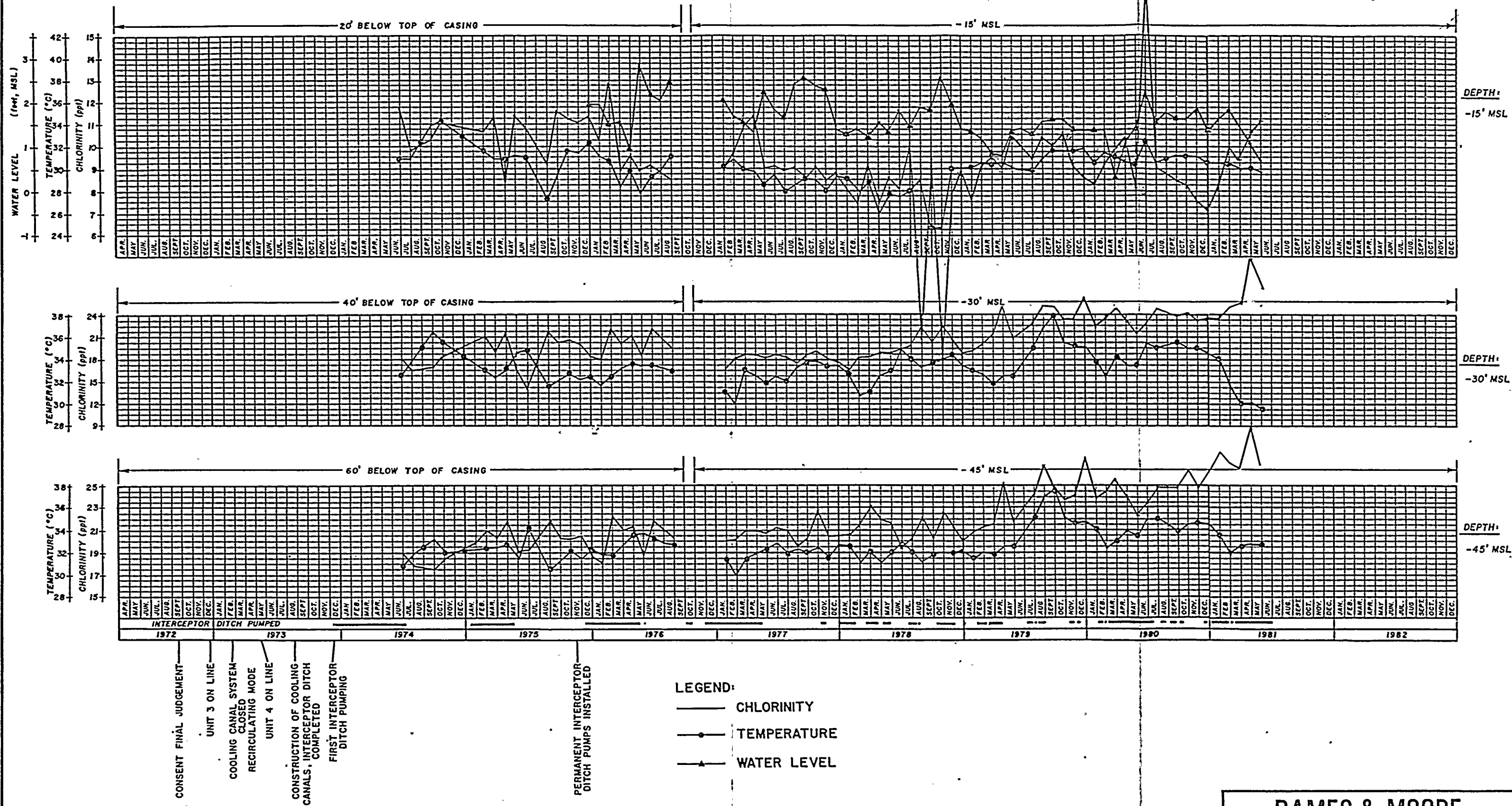
DAMES & MOORE

TIME-HISTORY PLOTS,  
WELL NUMBER X-1

0459804726 (7/81)







DAMES & MOORE

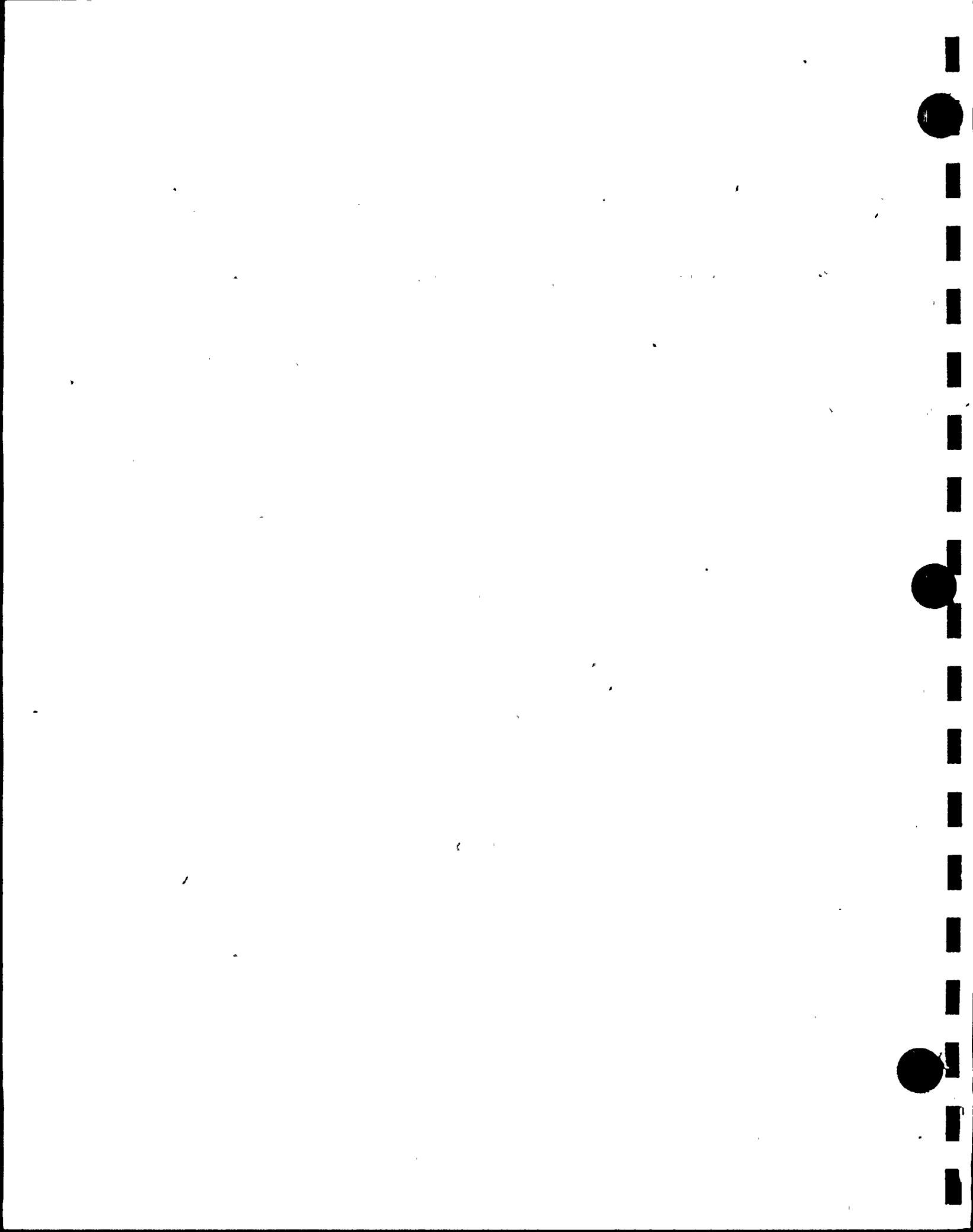
TIME-HISTORY PLOTS  
WELL NUMBER X-2

0459804726 (7/81)





APPENDIX B  
CONDUCTIVITY-CHLORINITY  
CALIBRATIONS

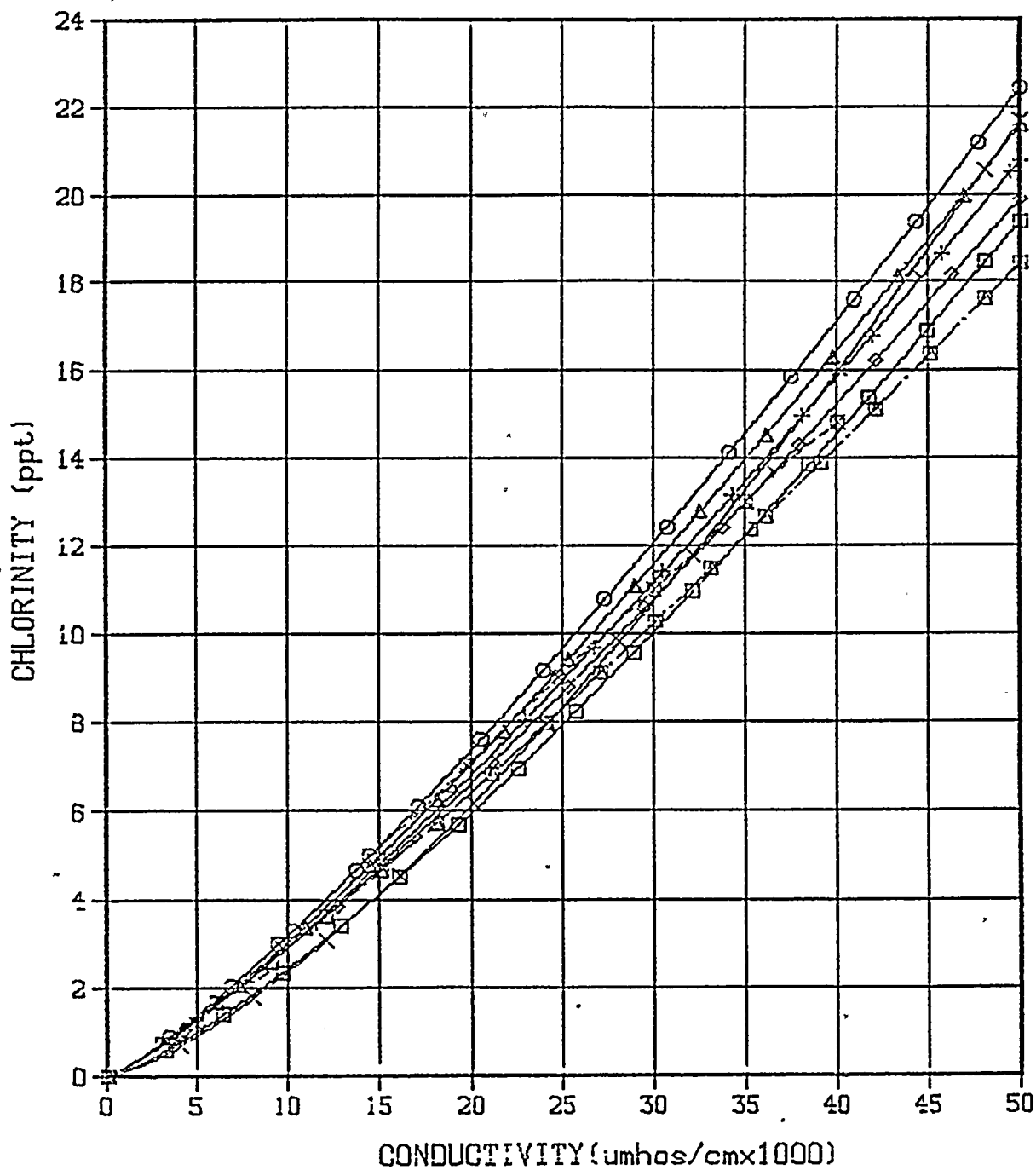


## APPENDIX B

### CONDUCTIVITY-CHLORINITY CALIBRATIONS

The following figures present graphically the conductivity-chlorinity relationship for the ground water samples collected during the July 1980-June 1981 monitoring period as determined by Laboratory analyses. A discussion of the procedures for developing these relationships is presented in Appendix E.





# LEGEND

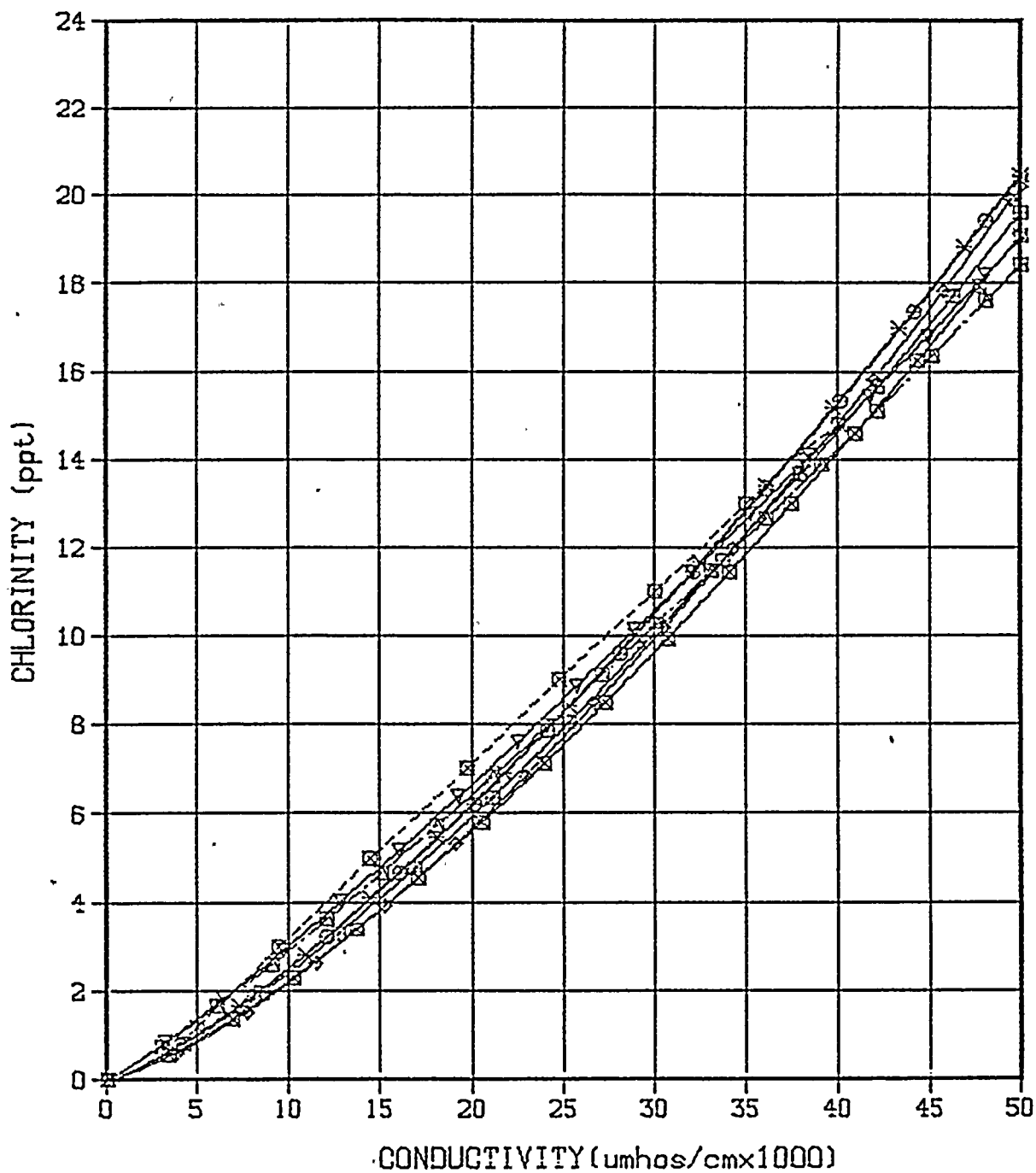
- |                  |               |
|------------------|---------------|
| ■ HISTORICAL     | ■ USGS        |
| □ JANUARY, 1981  | + APRIL, 1981 |
| ○ FEBRUARY, 1981 | × MAY, 1981   |
| △ MARCH, 1981    | ◇ JUNE, 1981  |

DAMES AND MOORE

CONDUCTIVITY-CHLORINITY  
RELATIONSHIPS  
G-SERIES WELLS

0459804726 (7/81) FIGURE B-1





# LEGEND

▣ HISTORICAL

▽ JULY, 1980

▣ AUGUST, 1980

× SEPTEMBER, 1980

▣ USGS

◇ OCTOBER, 1980

◊ NOVEMBER, 1980

▣ DECEMBER, 1980

DAMES AND MOORE

CONDUCTIVITY-CHLORINITY  
RELATIONSHIPS  
G-SERIES WELLS

0459804726 (7/81) FIGURE B-2





APPENDIX C  
INTERCEPTOR DITCH OPERATION



## APPENDIX C

### INTERCEPTOR DITCH OPERATION

The Interceptor Ditch Program consisted of construction of a ditch along the western edge of the cooling canal system and the installation of pumping facilities. The ditch and associated structures were established to control inland seepage of cooling canal water. This is accomplished by pumping water from the ditch during periods when a natural seaward ground water gradient does not exist. Operation of the pumping stations and requirements are presented in the Ground-Water Monitoring and Interceptor Ditch Operation Procedures Manual dated May 6, 1976.

Surface water elevations are monitored at staff gages located in Levee 31E Borrow Canal, Cooling Canal 32, and the Interceptor Ditch. These staff gages are located at five positions in each of these canals relative to Lines A, B, C, D and E as shown on the inset, Figure 2. Water elevations are recorded twice a month during non-pumping periods (usually June through November) and once a week during potential pumping periods (December through May), except when the pumps are operating. When pumping occurs, water elevations are recorded at least twice a week.

Pumping of the Interceptor Ditch for the wet season began July 1, 1980 (Figure C-1) with Lines A and B pumping until July 11. Lines A and B were pumped intermittently from August 7 to August 22, from September 11 to September 21 stopping



briefly on September 16 due to a power failure and again from October 7 to October 14, 1980 stopping briefly on October 9 due to a power failure.

Pumping of the Interceptor Ditch for the dry season began December 12, 1980 with Lines A and B pumping until December 24. No pumping was required during November 1980. Lines A and B were pumped again from January 9, 1981 to February 25 with Line C pumping from January 15 to February 22, 1981. Lines A and B were pumped briefly from March 2 to March 6, 1981. Lines A and B began pumping again on March 9 and continued pumping through June 30, 1981. Line C began pumping March 31 and also continued pumping through June 30, 1981. Lines D and E began pumping April 13, 1981 and continued pumping until June 23, 1981.

This completes the pumping program for the monitoring period from July 1980 to June 1981. An historic record of Interceptor Ditch pumping from the inception of the program in August 1973 is depicted graphically on the Time History plots in Appendix A of this report.



APPENDIX D  
VARIATIONS FROM HISTORICAL  
ENVELOPE CURVES





## APPENDIX D

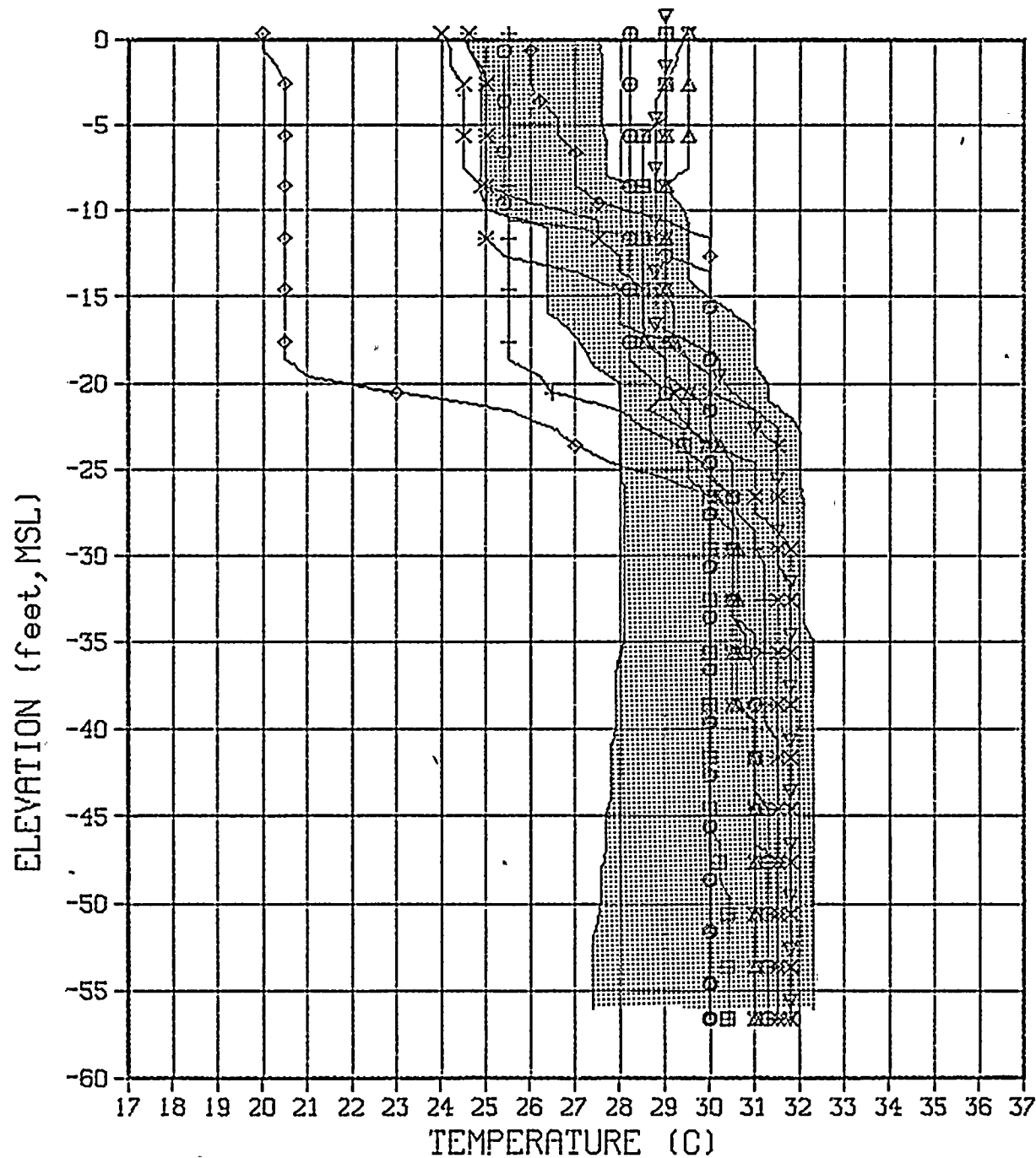
### VARIATIONS FROM HISTORICAL ENVELOPE CURVES

Historical envelope curves have been prepared which show the historical ranges of temperature and chlorinity profiles. The historical base for envelope curves is from November 1976 through June 1980.

This appendix contains plots of the historical envelope curves for each well having excursions from that envelope during the July, 1980 through June 1981 monitoring period. The shaded area on each plot is the historical envelope while temperature and chlorinity excursions are shown as profile lines.

The excursions presented in the following figures are similar to those for indicator wells presented in Section 2.0 of the report. The reader is referred to Sections 2.0 and 3.0 for a summary of the results of the July 1980-June 1981 monitoring program.





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    × MAR-81    ◆ MAY-81  
 ⊙ NOV-80    ✕ OCT-80    ⊞ SEP-80

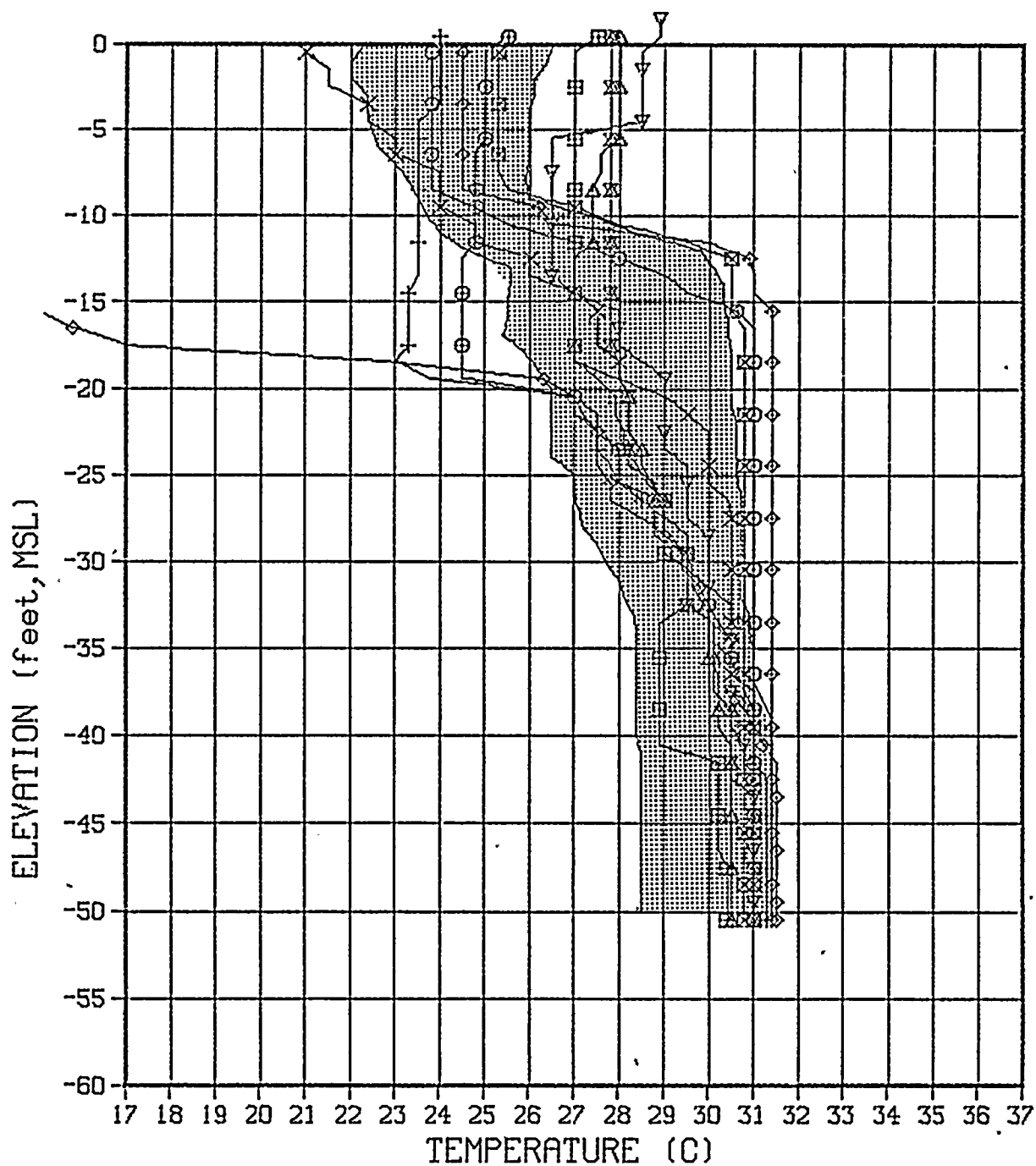
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER ID-A

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ⊠ JUN-81    ◆ MAY-81  
 ⊙ NOV-80    ⊠ OCT-80    ⊠ SEP-80

DAMES AND MOORE

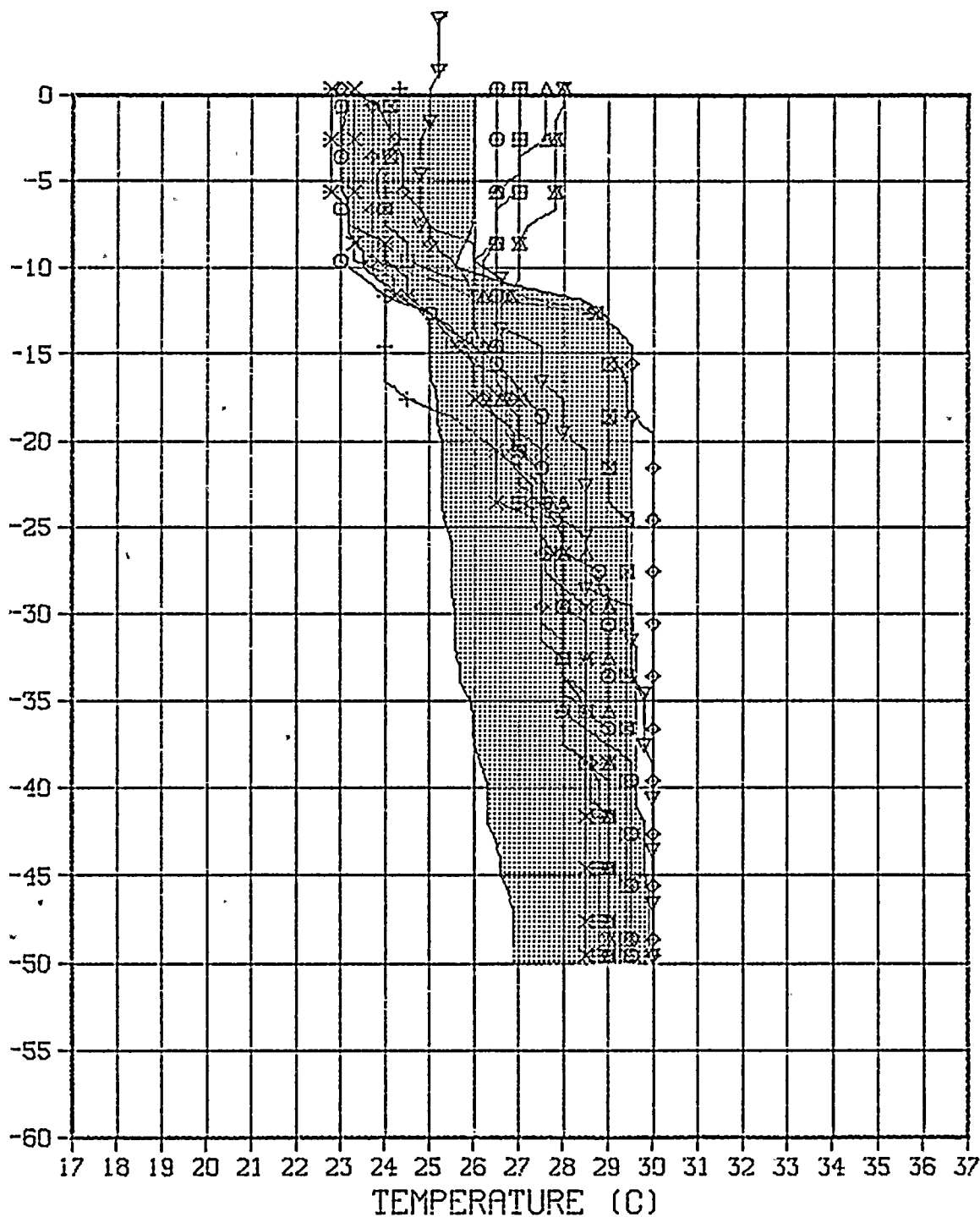
EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER ID-B

0459804726 (7/81)



ELEVATION (feet, MSL)



### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ■ JUN-81    \* MAR-81  
 ◇ MAY-81    ⊙ NOV-80    ✱ OCT-80    ■ SEP-80

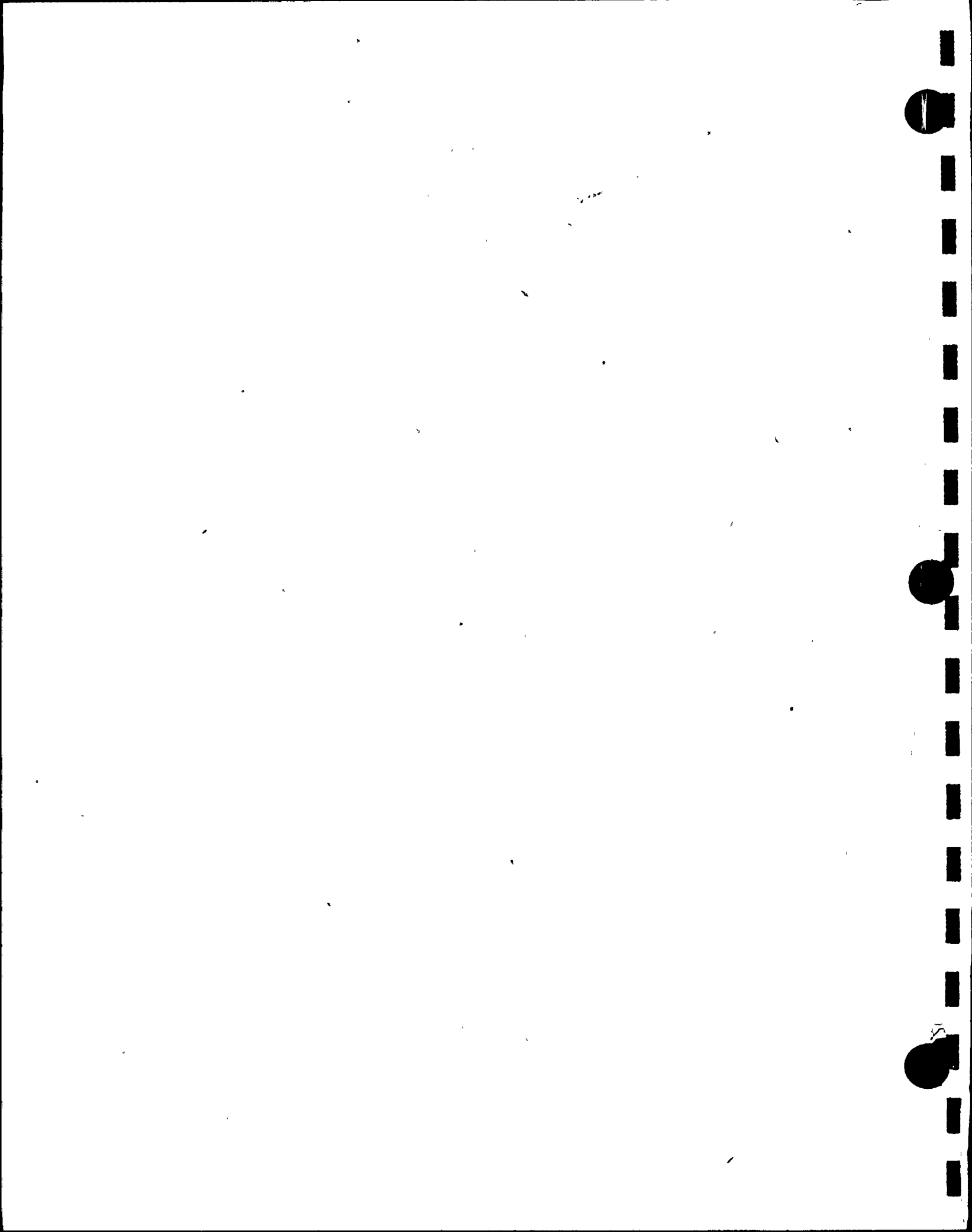
DAMES AND MOORE

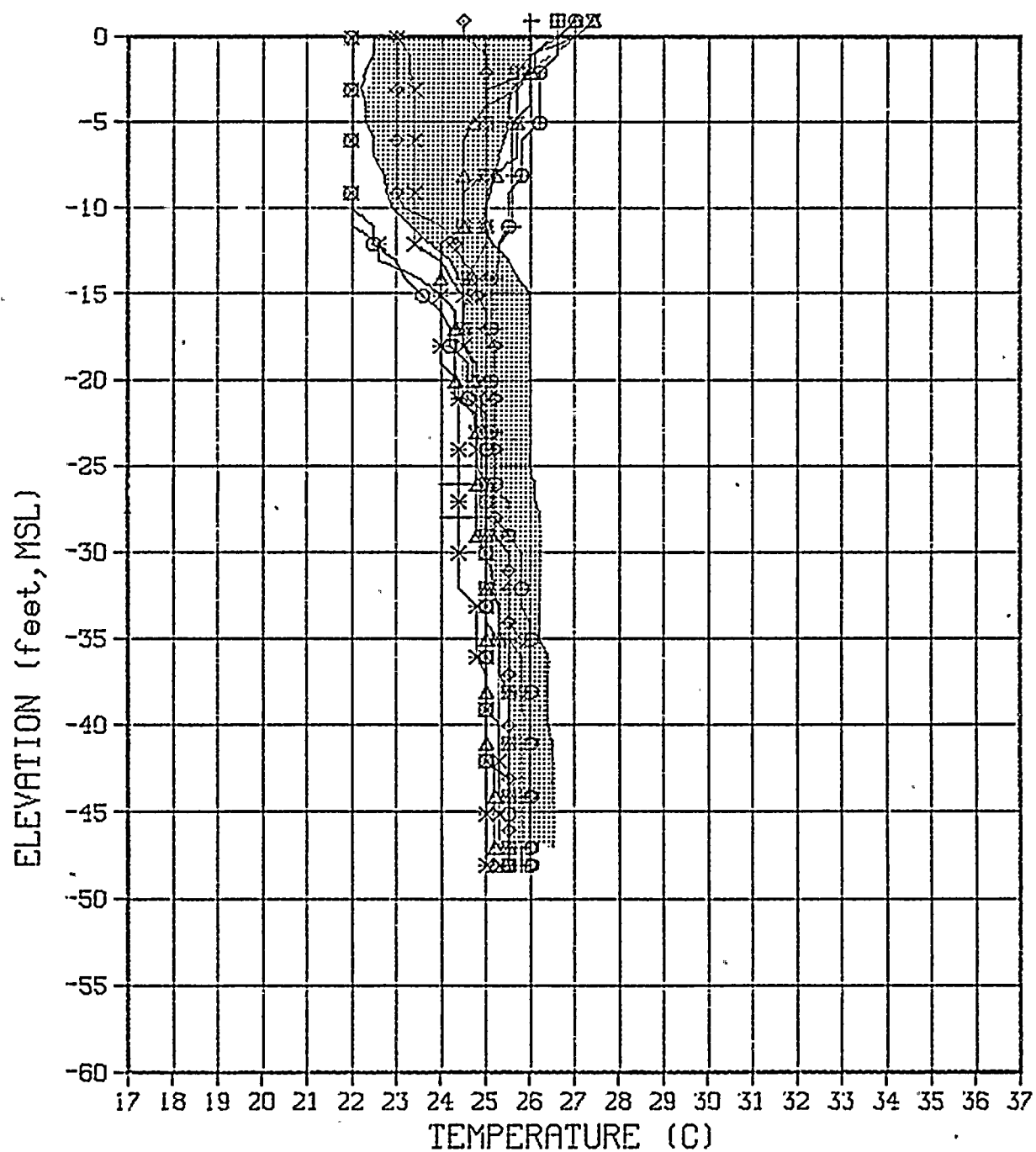
EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER ID-C

0459804726 (7/81)







### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81

◇ JAN-81    × MAR-81    ◇ MAY-81    ⊖ NOV-80

× OCT-80    ⊞ SEP-80

DAMES AND MOORE

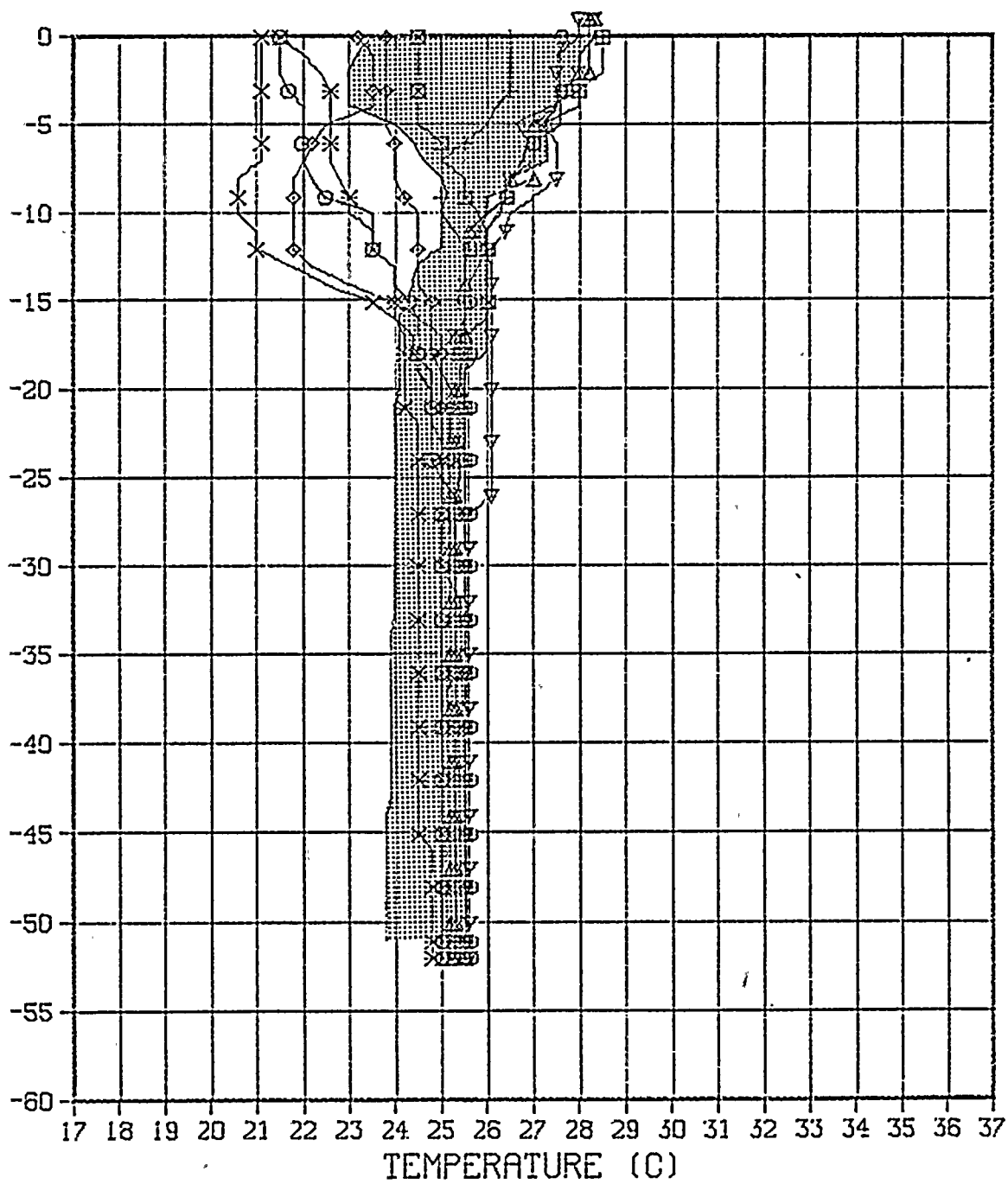
EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER ID-D

0459804726 (7/81)



ELEVATION (feet, MSL)



### LEGEND

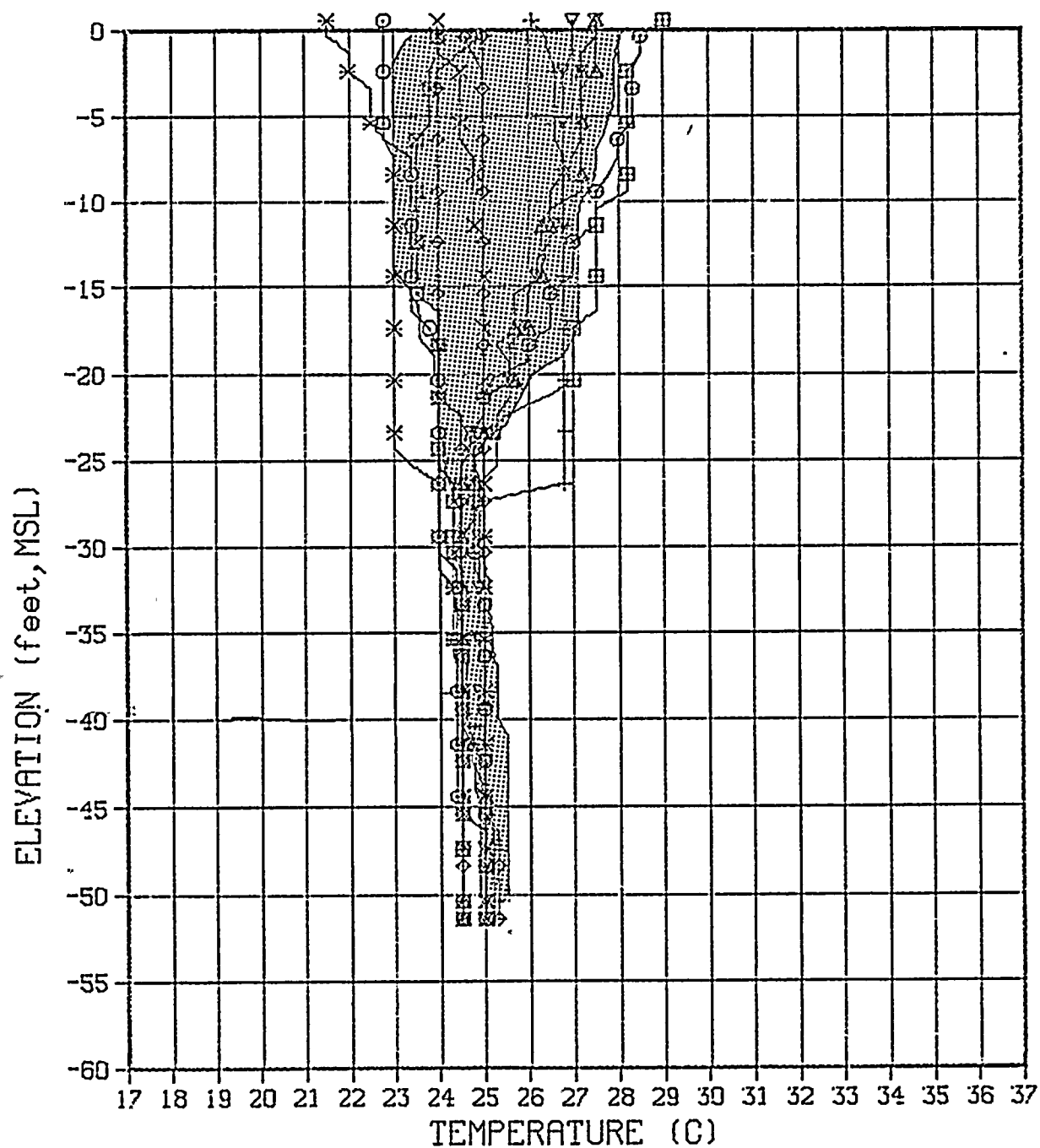
○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
◇ JAN-81    ▽ JUL-80    □ JUN-81    \* MAR-81  
◊ MAY-81    ⊙ NOV-80    ✕ OCT-80    ■ SEP-80

DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81  
WELL NUMBER ID-E

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81

◇ JAN-81    ▽ JUL-80    ▣ JUN-81    \* MAR-81

◊ MAY-81    ⊙ NOV-80    ⌘ OCT-80    ⊞ SEP-80

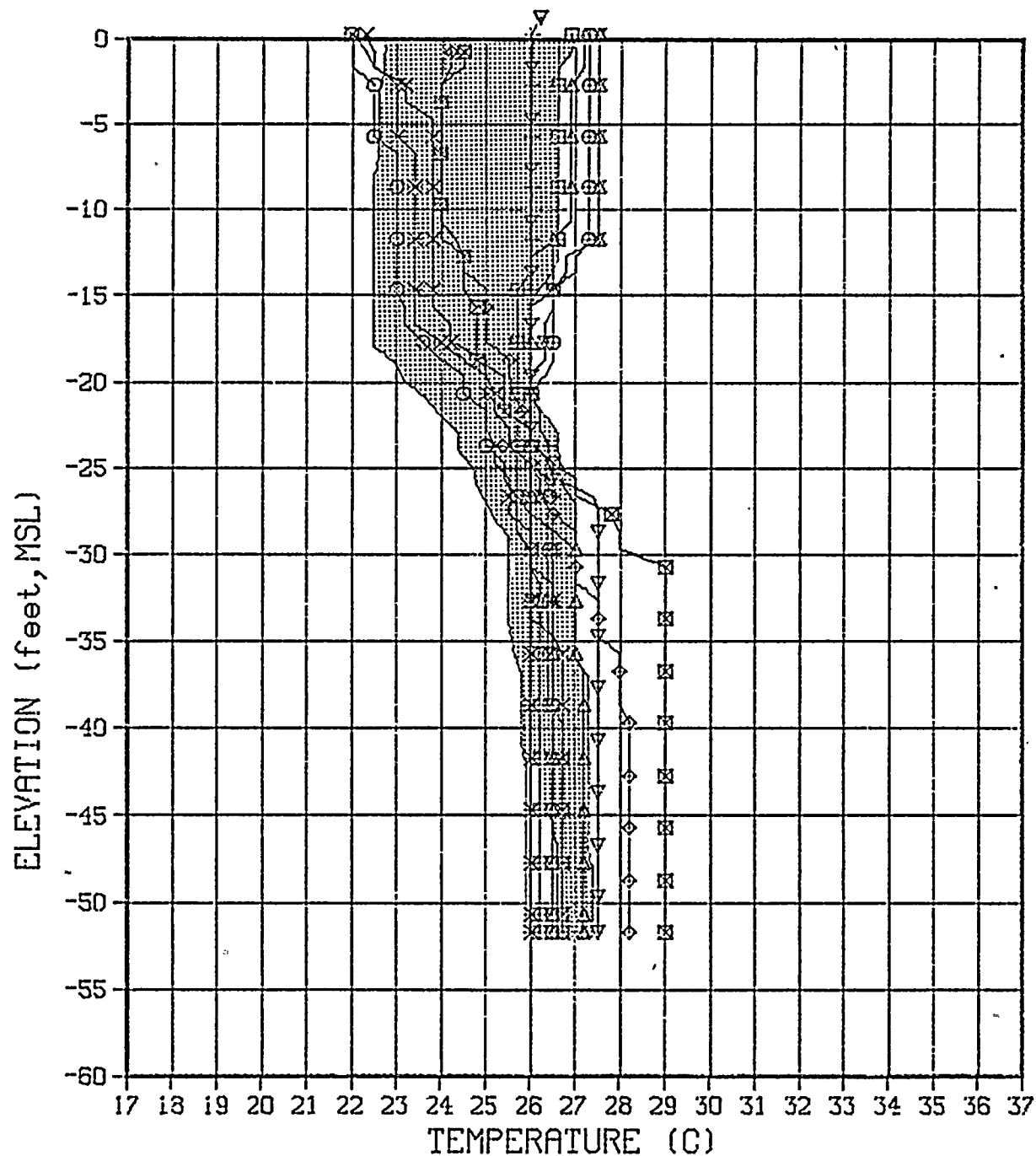
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-1

0459804726 (7/81)





# LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ▽ JUL-80    □ JUN-81    \* MAR-81    ◇ MAY-81  
 ⊙ NOV-80    ✕ OCT-80    ■ SEP-80

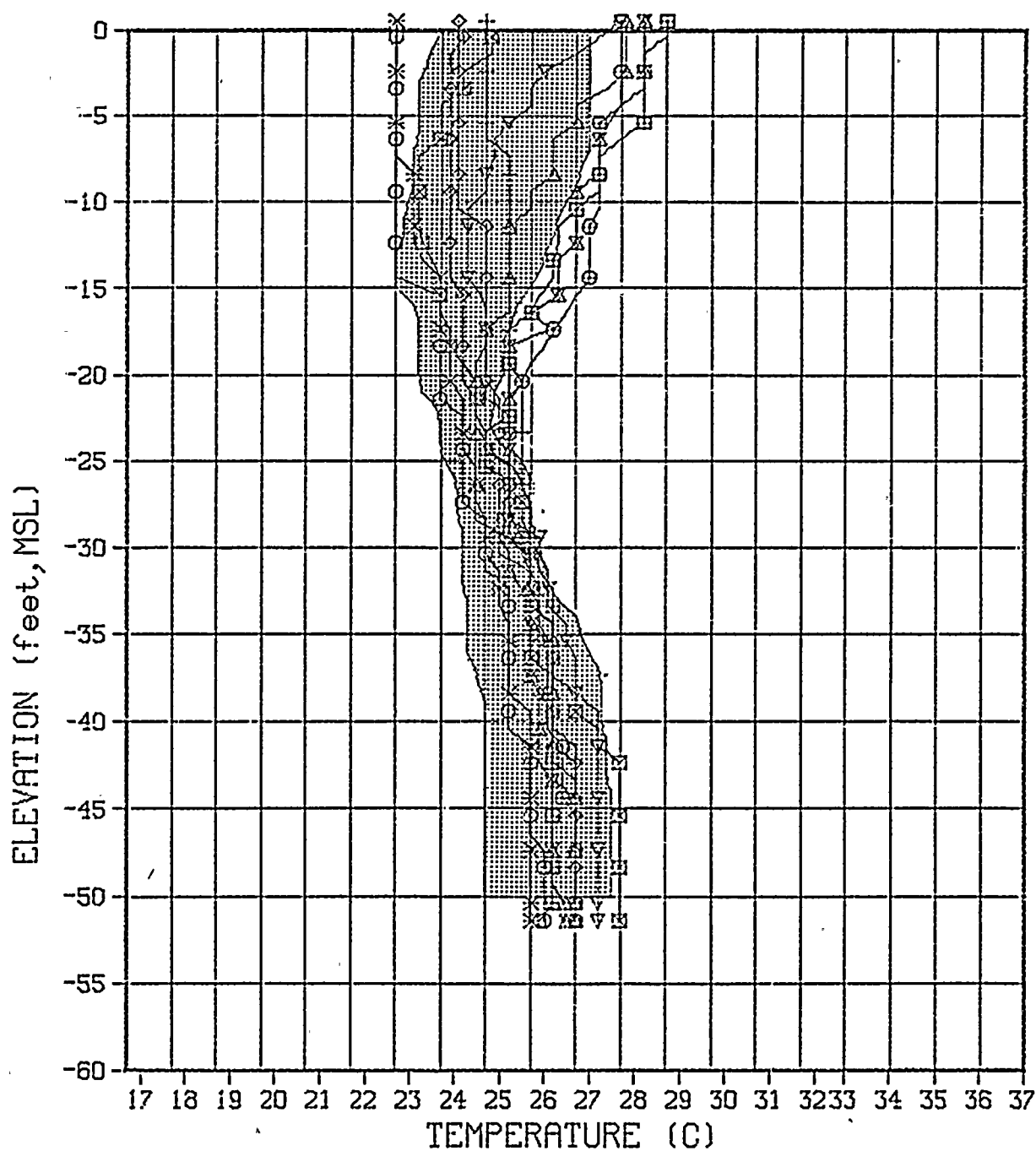
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81  
 WELL NUMBER L-2

0459804726 (7/81)







# LEGEND

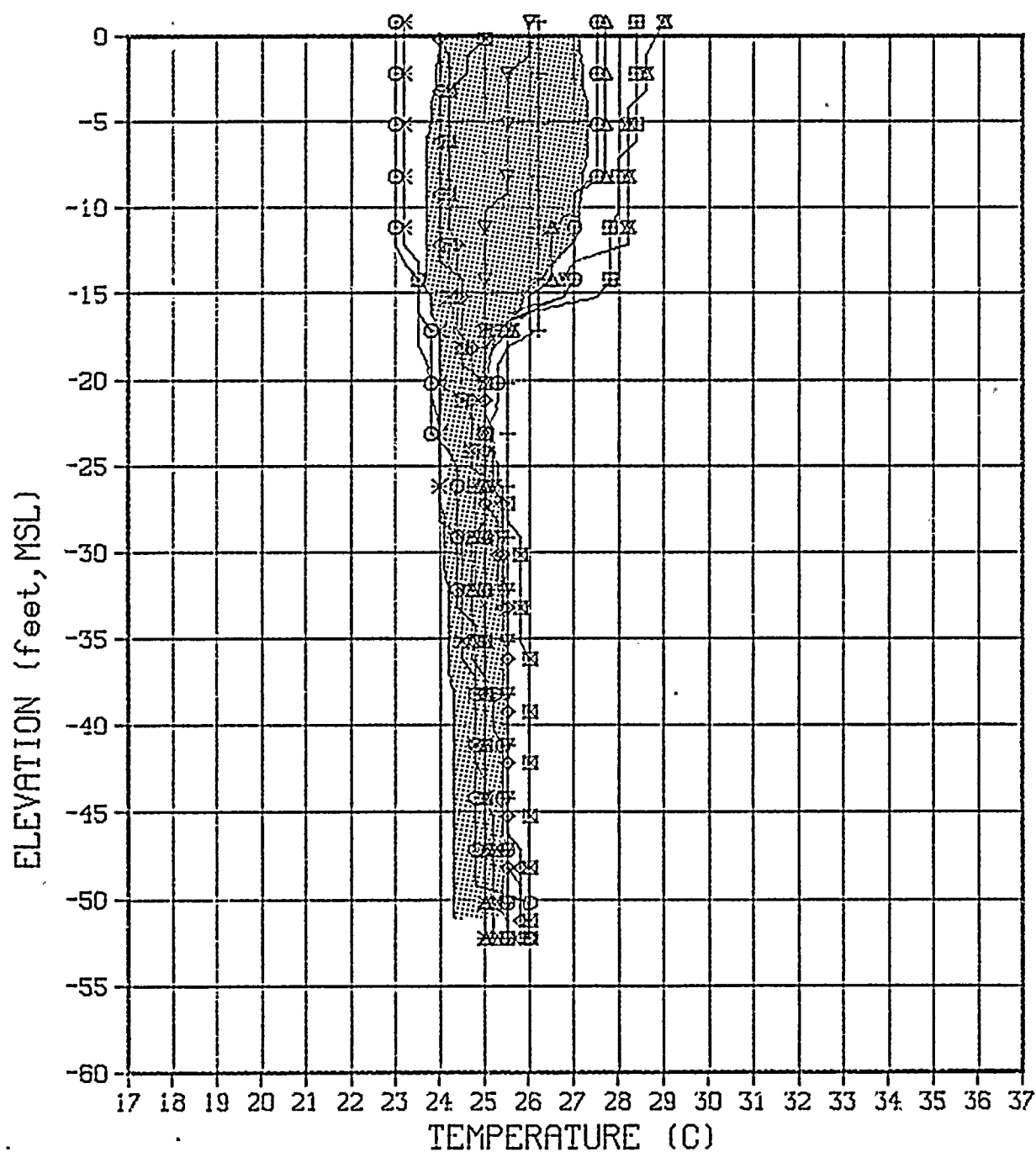
○ APR-81    △ AUG-80    + DEC-80    ◇ JAN-81  
 ▽ JUL-80    ▢ JUN-81    × MAR-81    ◇ MAY-81  
 ⊙ NOV-80    ✕ OCT-80    ▣ SEP-80

DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81  
 WELL NUMBER L-3

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    ◇ JAN-81  
 ▽ JUL-80    ▣ JUN-81    × MAR-81    ◆ MAY-81  
 ⊙ NOV-80    ✕ OCT-80    ▢ SEP-80

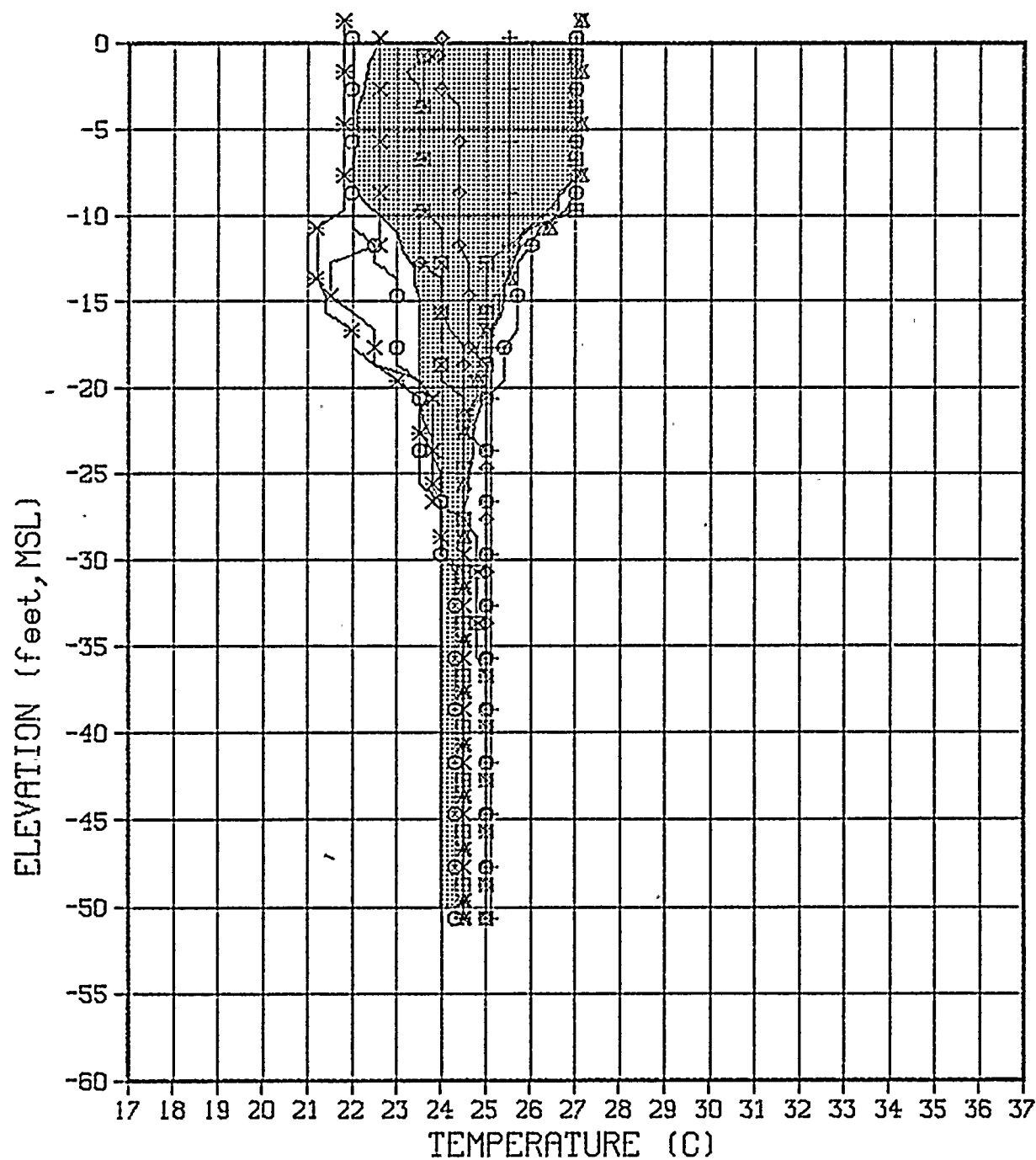
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-4

0459804726 (7/81)





### LEGEND

○ APR-81   + DEC-80   × FEB-81   ◇ JAN-81  
 ■ JUN-81   \* MAR-81   ◇ MAY-81   ⊙ NOV-80  
 ⊗ OCT-80   ▣ SEP-80

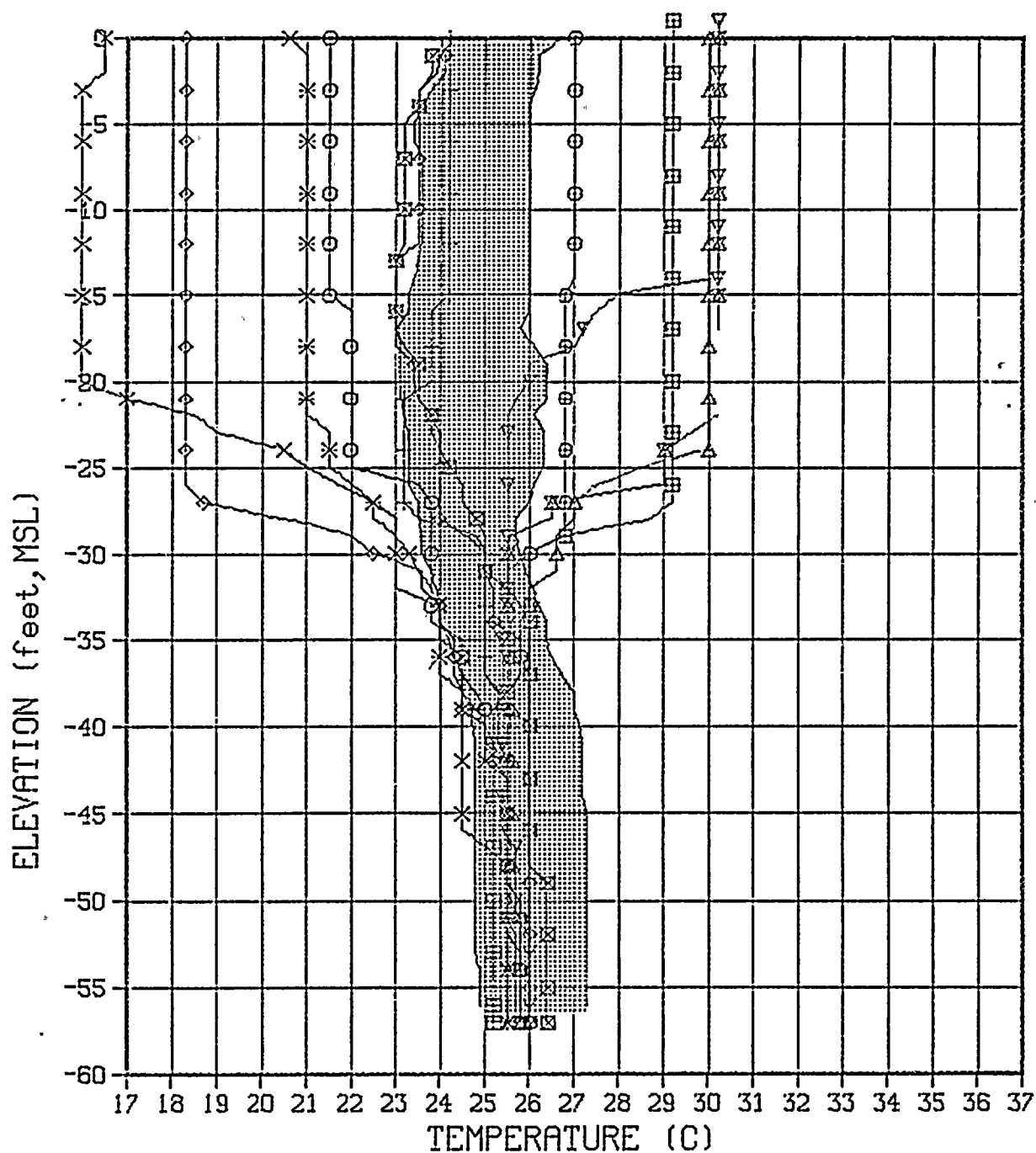
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER L-5

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ▣ JUN-81    × MAR-81  
 ◇ MAY-81    ⊙ NOV-80    ⋈ OCT-80    ⊞ SEP-80

DAMES AND MOORE

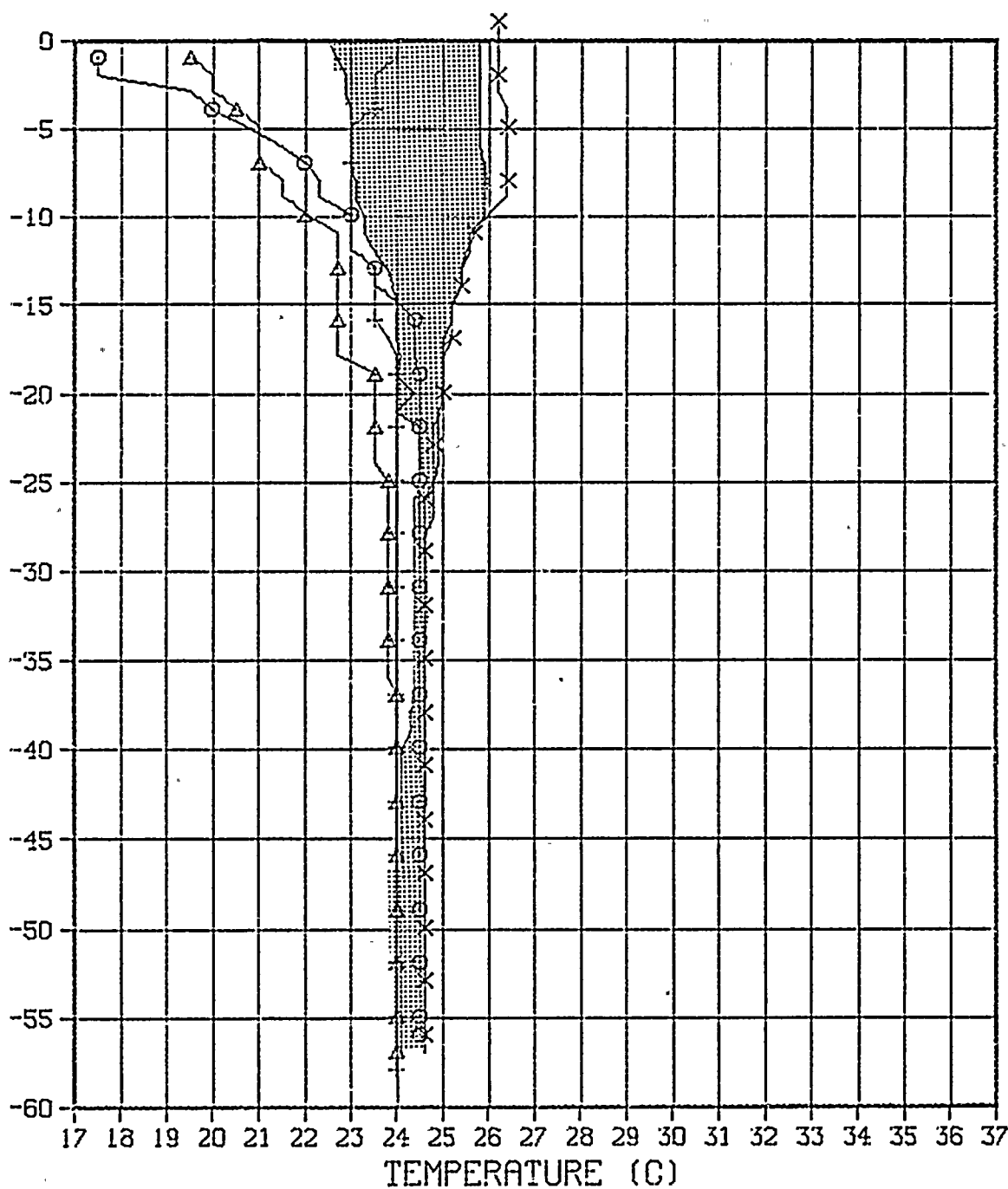
EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81  
 WELL NUMBER L-6

0459804726 (7/81)





ELEVATION (feet, MSL)



LEGEND

○ JAN-81 △ MAR-81 + MAY-81 × NOV-80

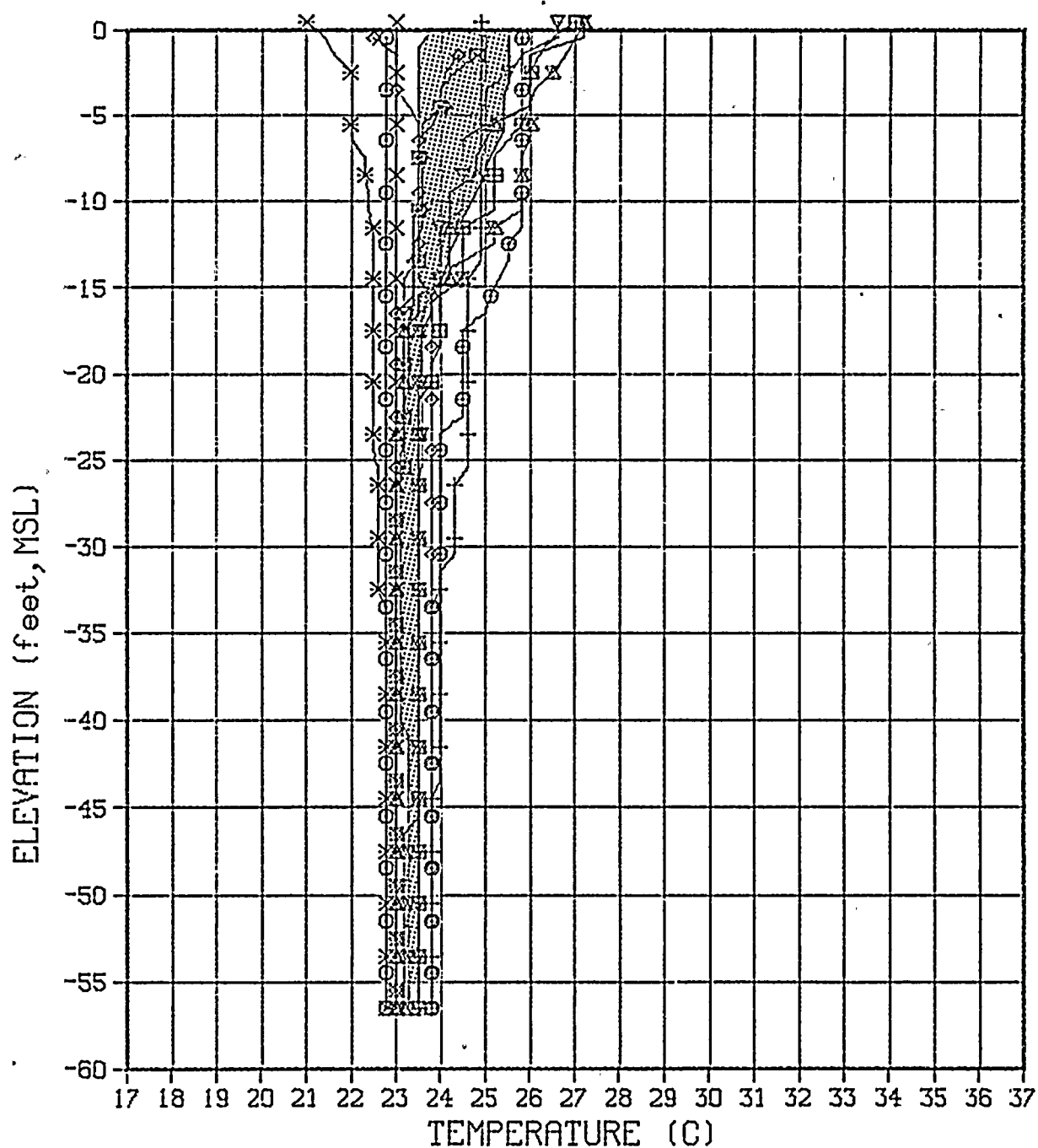
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-6

0459804726 (7/81)





### LEGEND

- APR-81    △ AUG-80    + DEC-80    × FEB-81
- ◇ JAN-81    ▽ JUL-80    ▣ JUN-81    × MAR-81
- ◆ MAY-81    ⊙ NOV-80    × OCT-80    ▣ SEP-80

DAMES AND MOORE

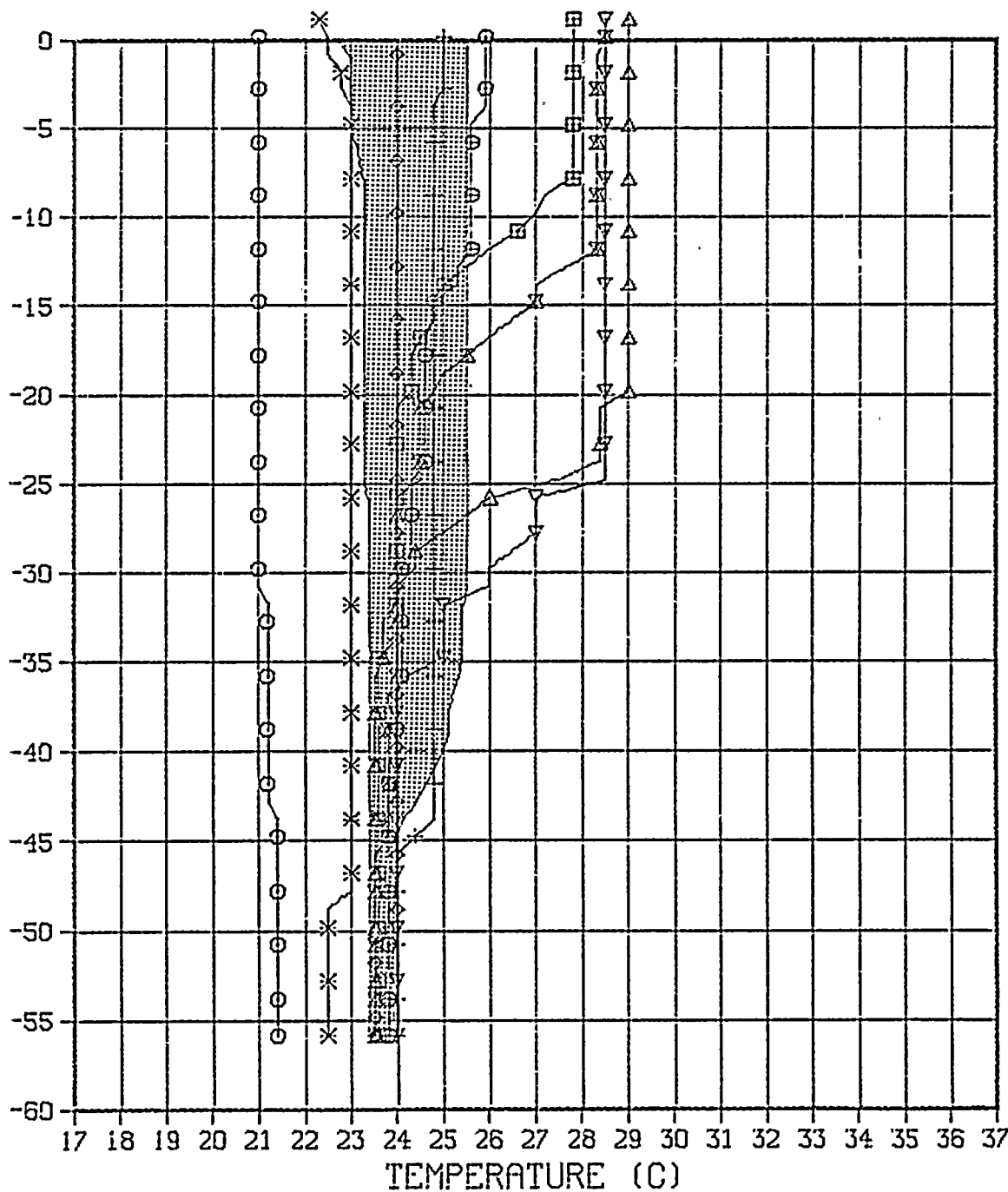
EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-14

0459804726 (7/81)



ELEVATION (feet, MSL)



# LEGEND

○ APR-81    △ AUG-80    + DEC-80    ▽ JUL-80  
 \* MAR-81    ◇ MAY-81    ⊙ NOV-80    ✕ OCT-80  
 □ SEP-80

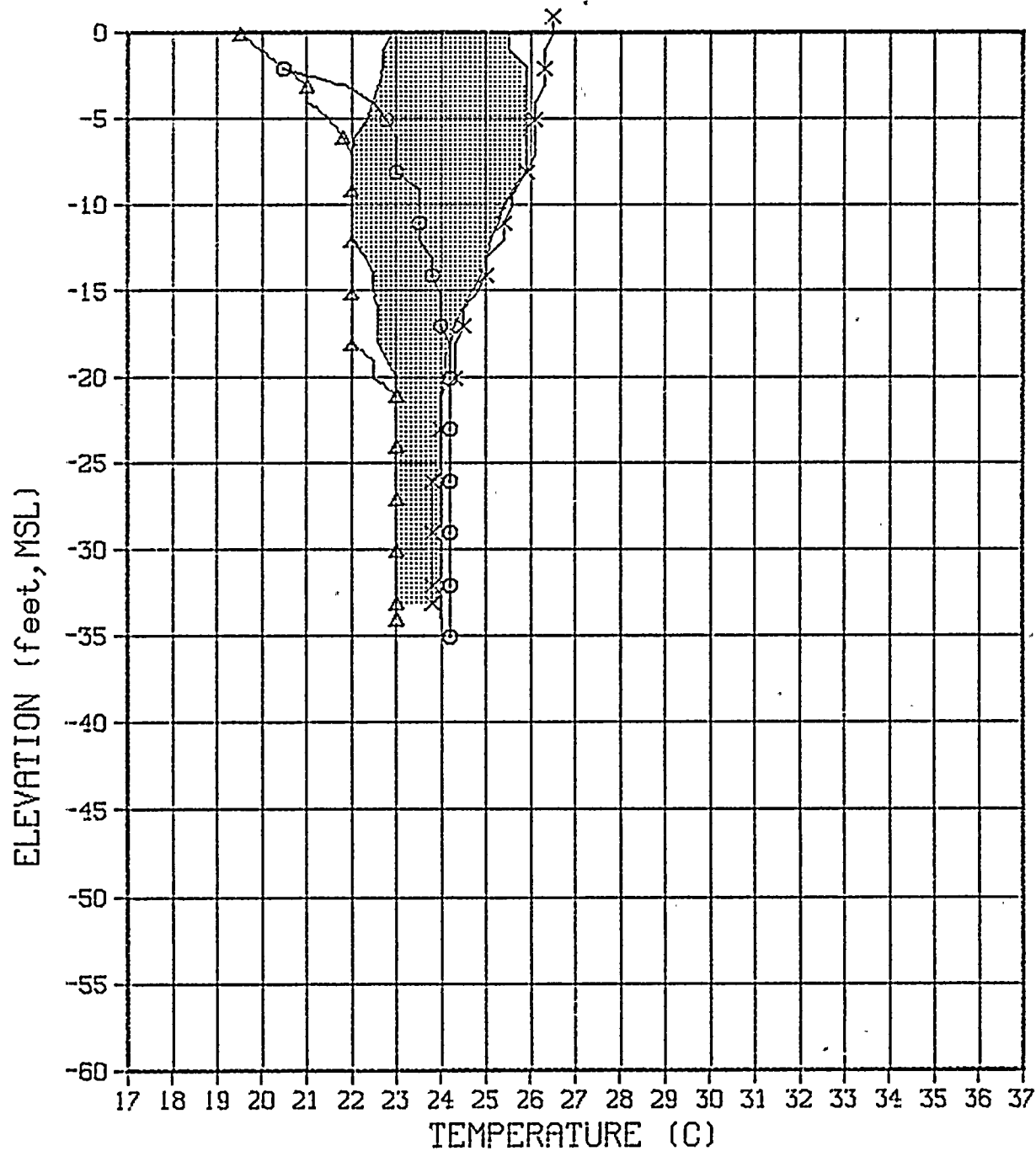
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-21

0459804726 (7/81)





### LEGEND

○ JAN-81    △ MAR-81    × NOV-80

DAMES AND MOORE

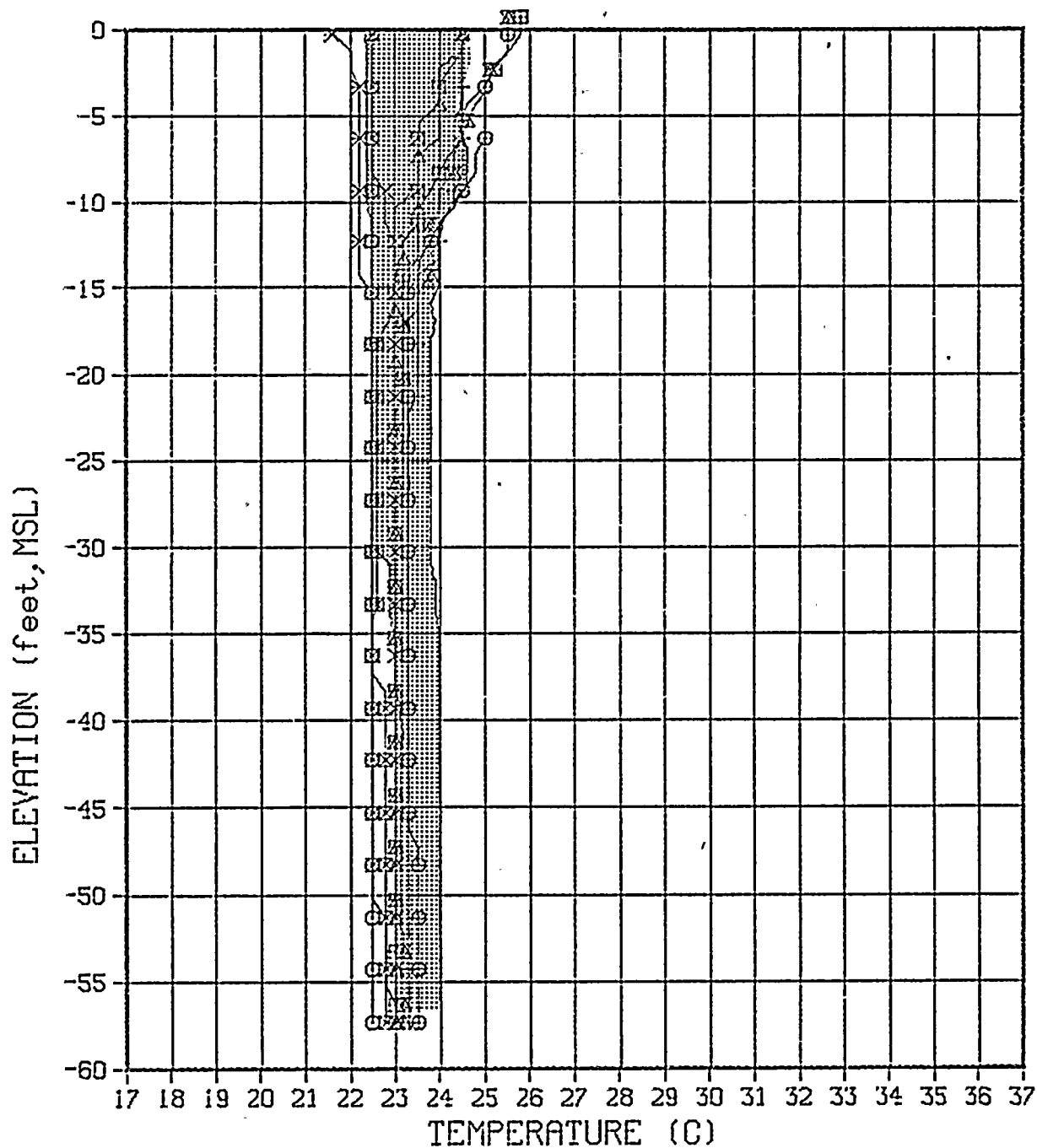
EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-27

0459804726 (7/81)







### LEGEND

○ APR-81   △ AUG-80   + DEC-80   × FEB-81

◻ JUN-81   × MAR-81   ⊙ NOV-80   ⊗ OCT-80

◻ SEP-80

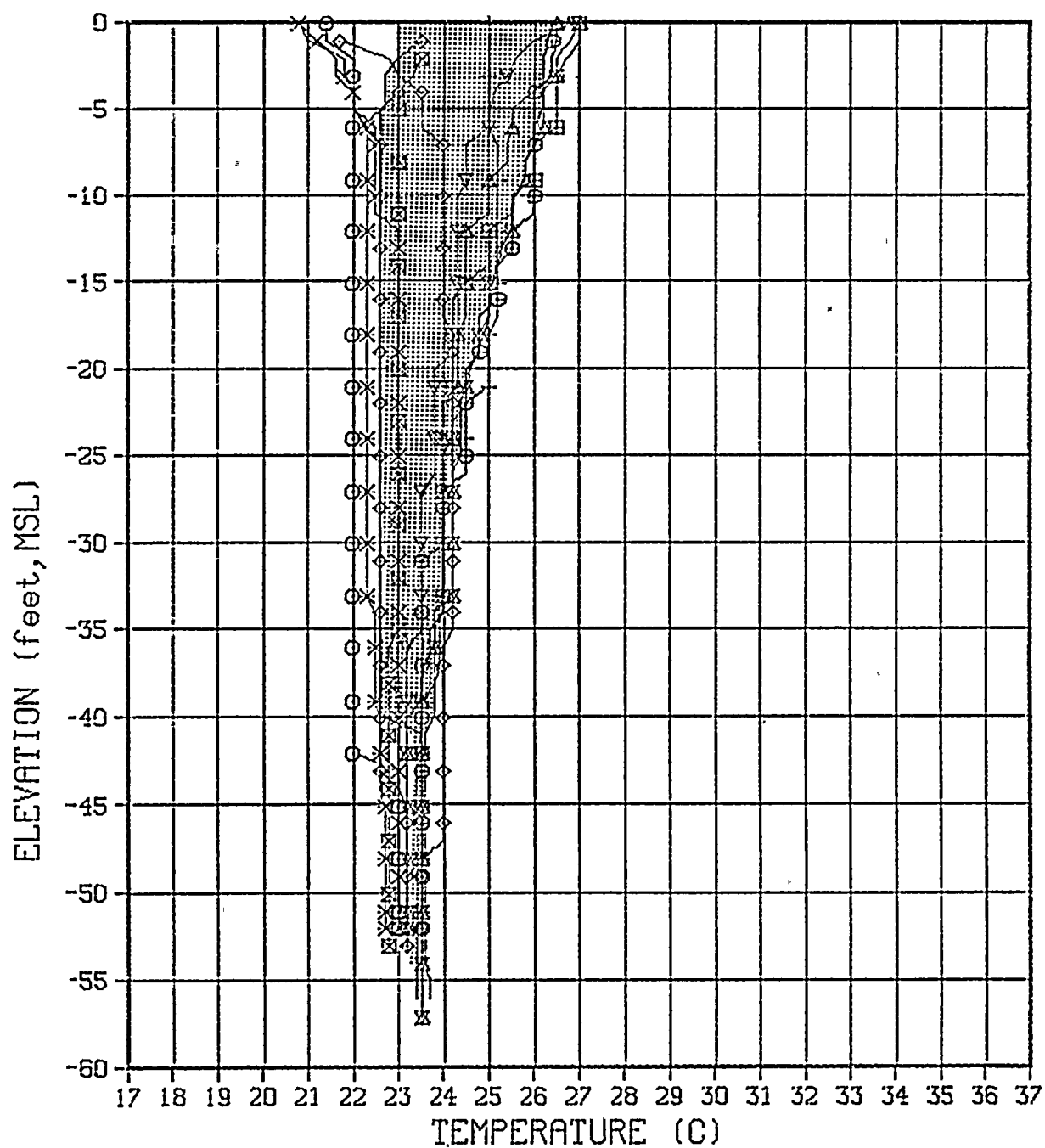
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER G-28

0459304726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    + DEC-80    × FEB-81  
 ◇ JAN-81    ▽ JUL-80    ■ JUN-81    \* MAR-81  
 ◆ MAY-81    ⊙ NOV-80    ⋈ OCT-80    ■ SEP-80

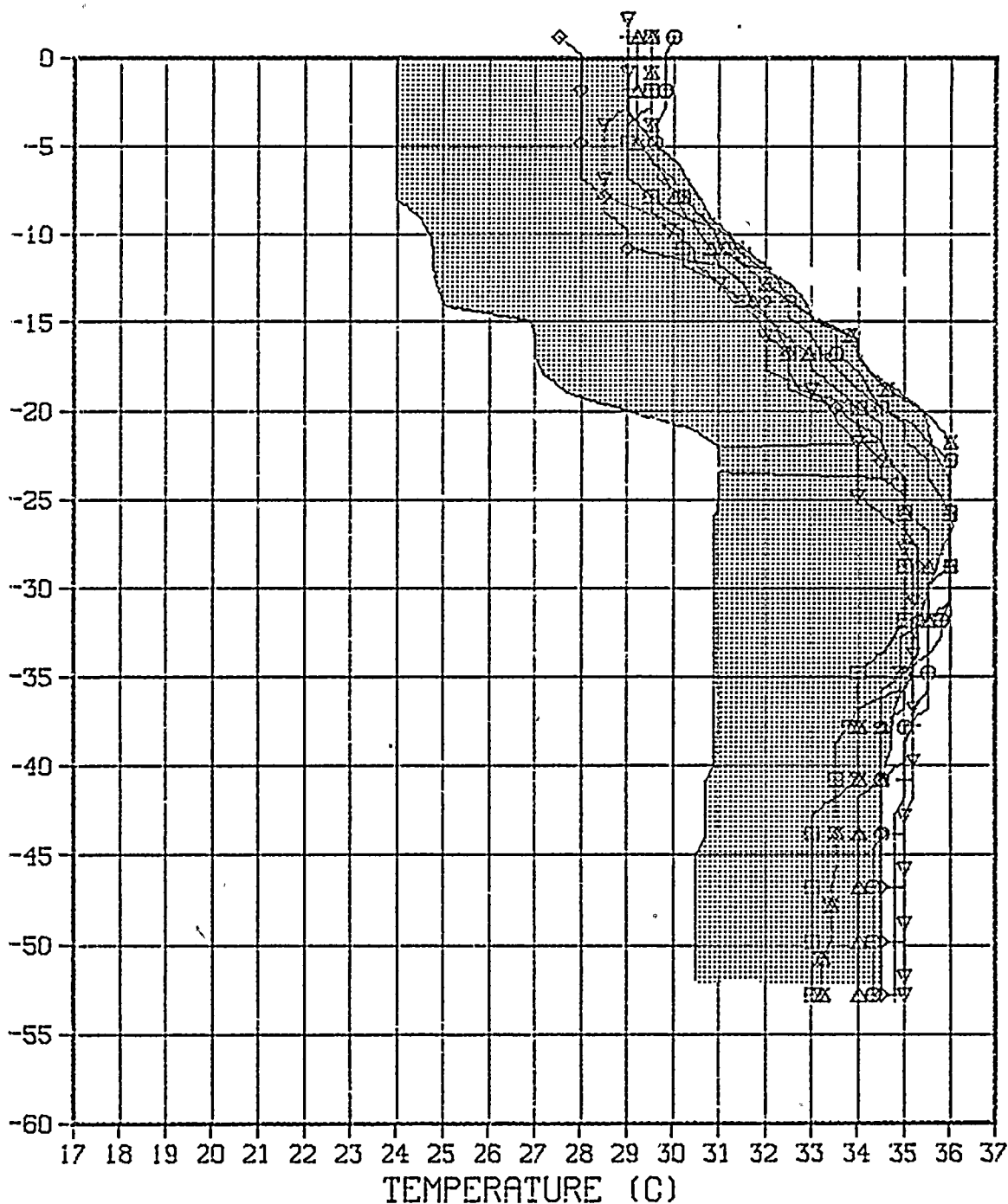
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81  
 WELL NUMBER G-35

0459804726 (7/81)



ELEVATION (feet, MSL)



LEGEND

△ AUG-80 + DEC-80 ◇ JAN-81 ▽ JUL-80

⊙ NOV-80 ✕ OCT-80 ▣ SEP-80

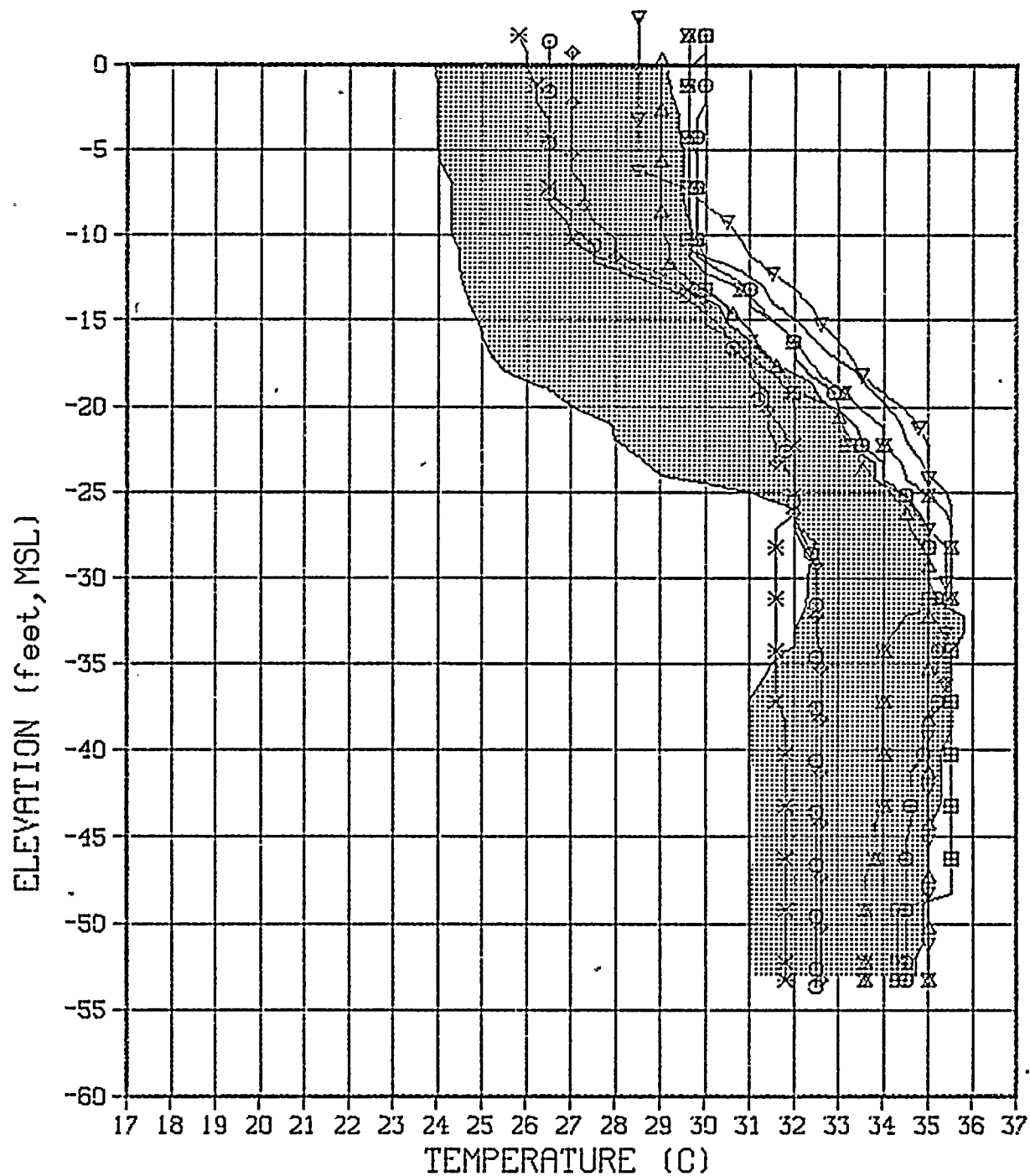
DAMES AND MOORE

EXCURSIONS FROM TEMPERATURE  
ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER X-1

0459804726 (7/81)





### LEGEND

○ APR-81    △ AUG-80    ▽ JUL-80    × MAR-81  
 ◇ MAY-81    ⊙ NOV-80    ✕ OCT-80    ⊞ SEP-80

DAMES AND MOORE

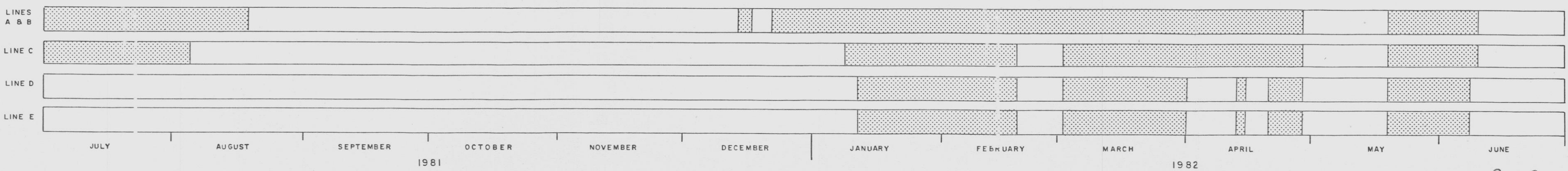
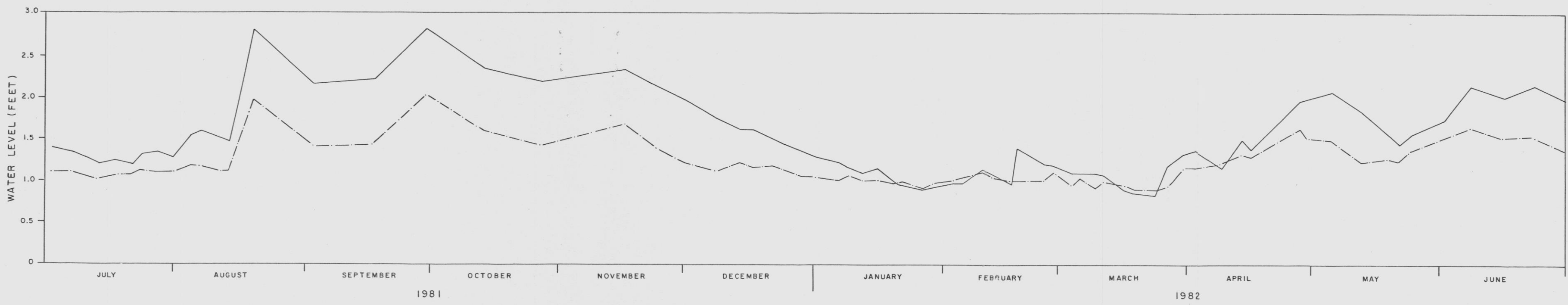
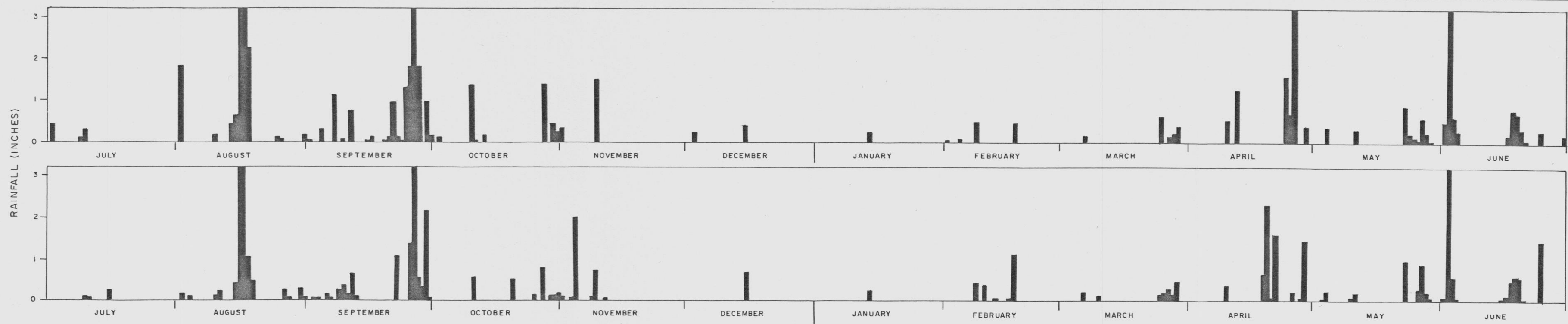
EXCURSIONS FROM TEMPERATURE  
 ENVELOPE FOR JUL 80 - JUN 81

WELL NUMBER X-2

0459804726 (7/81)







STRUCTURE 20

STRUCTURE 20-F

— LEVEE 31 } LINE C  
- - - CANAL 32

TIME HISTORY:  
INTERCEPTOR  
DITCH OPERATION

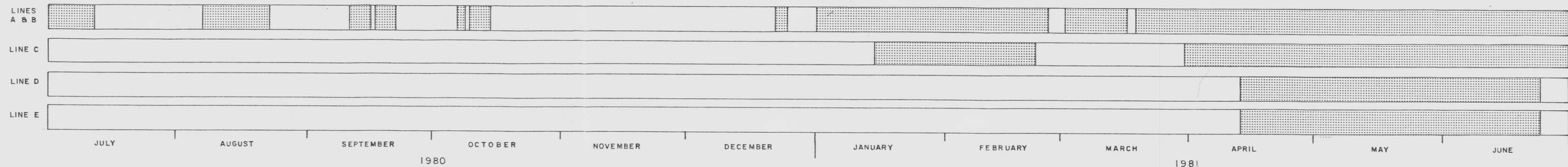
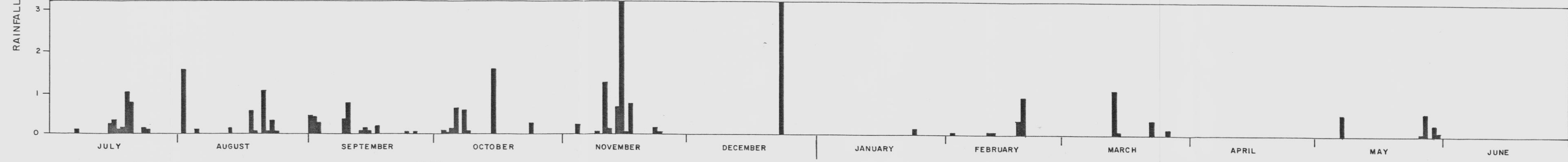
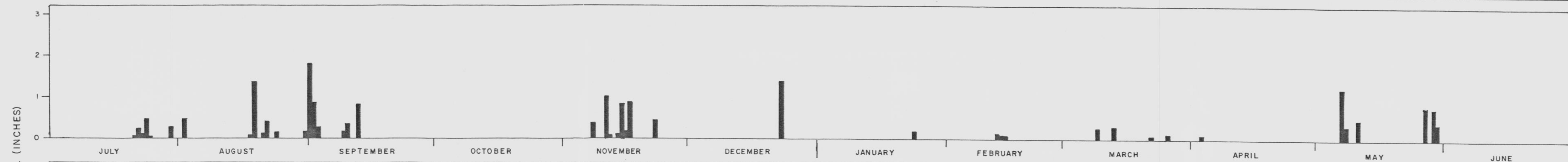
D

DAMES & MOORE

FIGURE C-1

8109040105-01

459804726 (7/82)



TERA  
APERTURE  
CARD

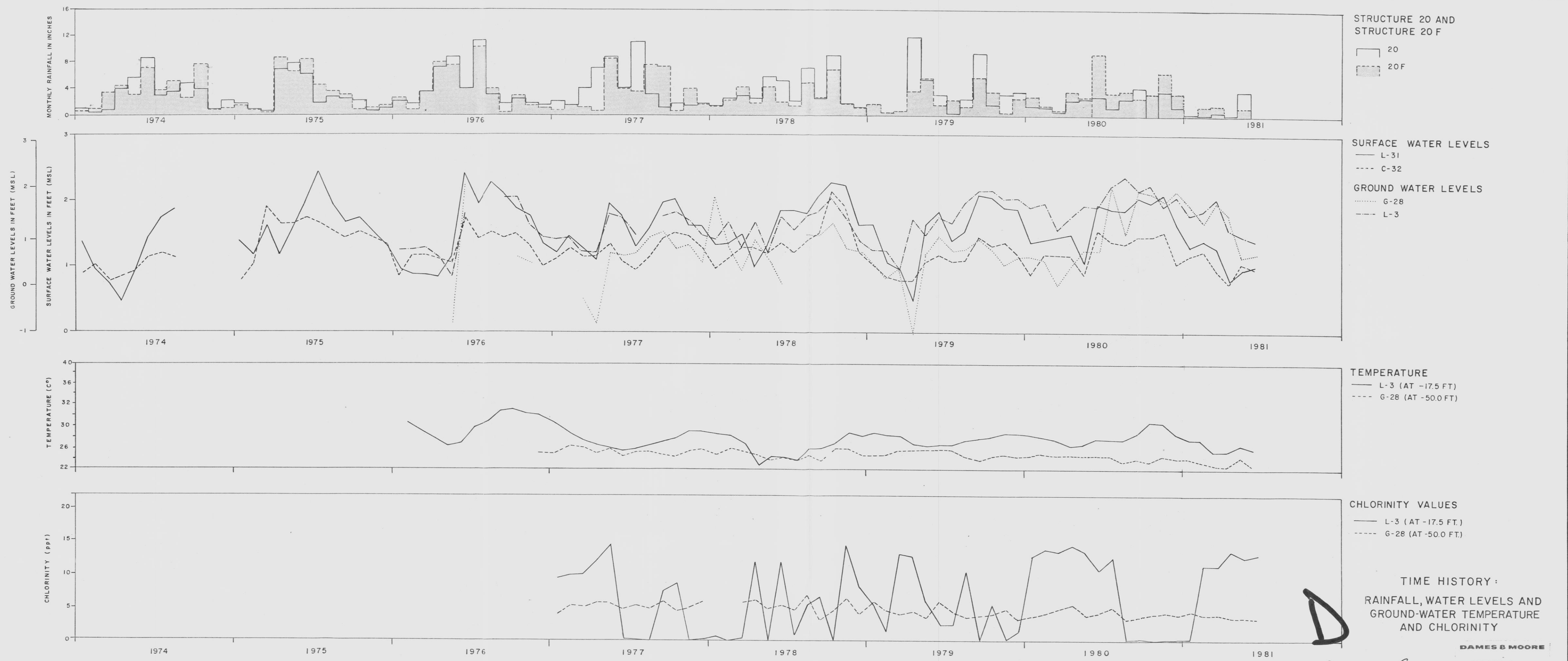
TIME HISTORY  
INTERCEPTOR  
DITCH OPERATION

DAMES & MOORE

810904 0105.02 FIGURE C-1

459804726 (7/81)

0459804726(11/79)

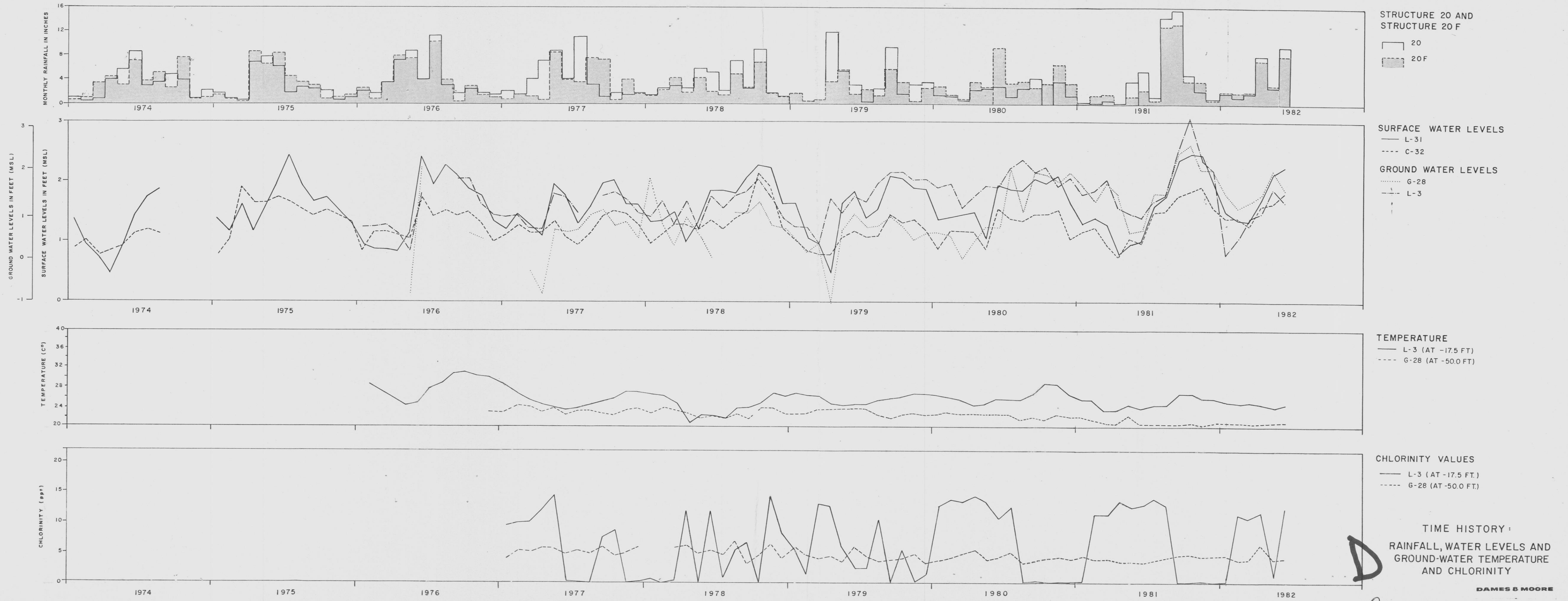


TIME HISTORY :  
RAINFALL, WATER LEVELS AND  
GROUND-WATER TEMPERATURE  
AND CHLORINITY

8109040105-03



0459804726 (11/79)



8109040105.04

FIGURE 4