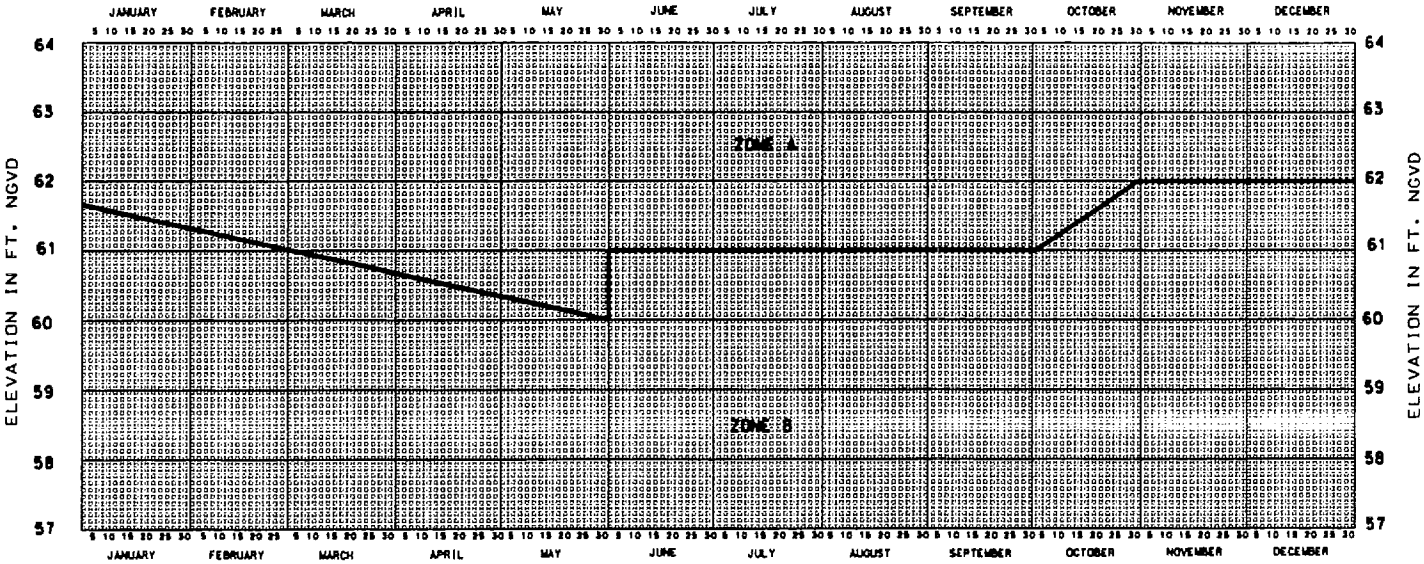
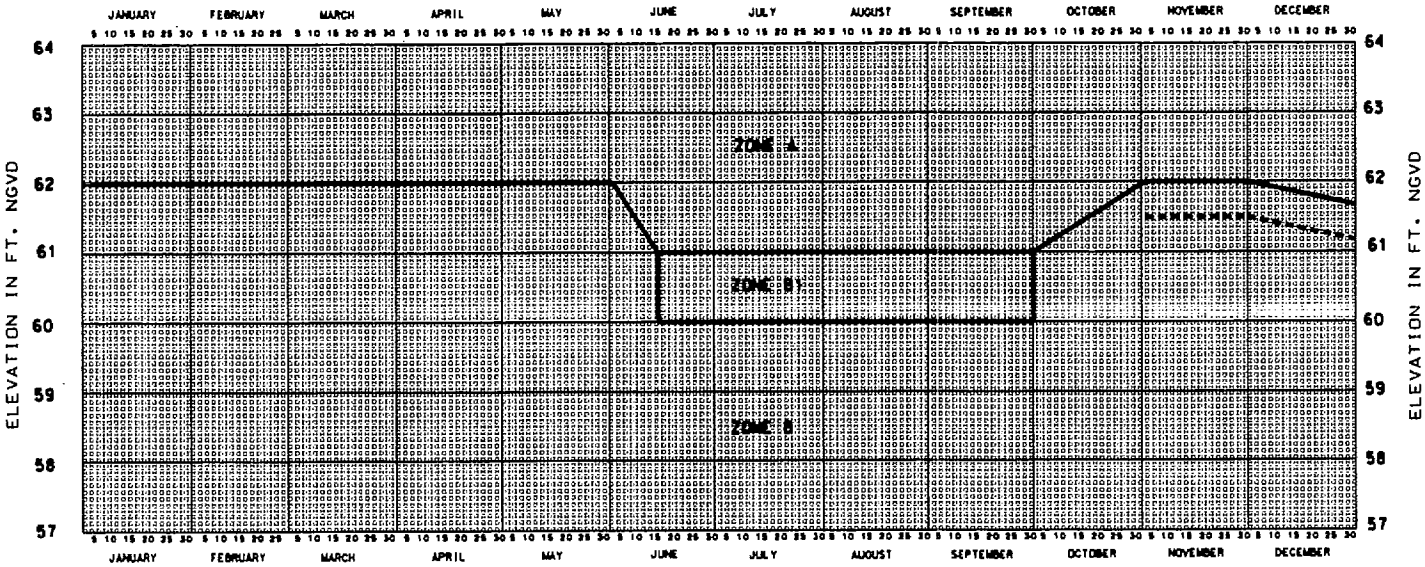


ZONE	RELEASES S-57
A	AT DESIGN CAPACITY (170 CFS) EXCEPT WHEN THE LAKE IS WITHIN 0.5 FEET OF DESIRED STAGE. FORECASTS WILL THEN BE MADE AND RELEASES STARTED TO BRING THE LAKE BACK TO SCHEDULE WITHIN 15 DAYS.
B	TO MAINTAIN MINIMUM FLOWS.

CENTRAL AND SOUTHERN FLORIDA
INTERIM REGULATION SCHEDULE
LAKES JOEL, MYRTLE,
& PRESTON
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOR CALENDAR YEAR 1 (YR1) OF THE
ALLIGATOR CHAIN'S EXTREME DRAWDOWN

FIGURE 5



ZONE	RELEASES S-57
A	AT DESIGN CAPACITY (170 CFS) EXCEPT WHEN THE LAKE IS WITHIN 0.5 FEET OF DESIRED STAGE. FORECASTS WILL THEN BE MADE AND RELEASES STARTED TO BRING THE LAKE BACK TO SCHEDULE WITHIN 15 DAYS.
B	TO MAINTAIN MINIMUM FLOWS.

CENTRAL AND SOUTHERN FLORIDA
INTERIM REGULATION SCHEDULE
LAKES JOEL, MYRTLE,
& PRESTON
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOR CALENDAR YEAR 2 (YR2) OF THE
ALLIGATOR CHAIN'S EXTREME DRAWDOWN

NOTES:

1) (———————) USE THIS SCHEDULE IF 1 NOVEMBER STAGE IS 61.5 FEET OR ABOVE.
2) (- - - - - - - - - - - -) USE THIS SCHEDULE IF 1 NOVEMBER STAGE IS BELOW 61.5 FEET.
3) REGULATION TO BE SUCH THAT DRAWDOWN TO 59.5 FEET OCCURS AT LEAST TWICE BUT NOT MORE THAN THREE TIMES IN ANY 6-YEAR PERIOD.
4) REGULATION SCHEDULE WILL REMAIN AT 62.0 FEET FROM 1 JANUARY (YR2) THROUGH 31 MAY (YR2), AFTER WHICH IT DECLINES TO 61.0 FEET BY 15 JUNE (YR2). BEGINNING 1 JUNE (YR2), WHEN IN ZONE A OR IN ZONE B1, RELEASES THROUGH S-58 MAY BE MADE AS NECESSARY TO HELP REFILL THE ALLIGATOR CHAIN OF LAKES.

FIGURE 6

In-Lake Work Areas

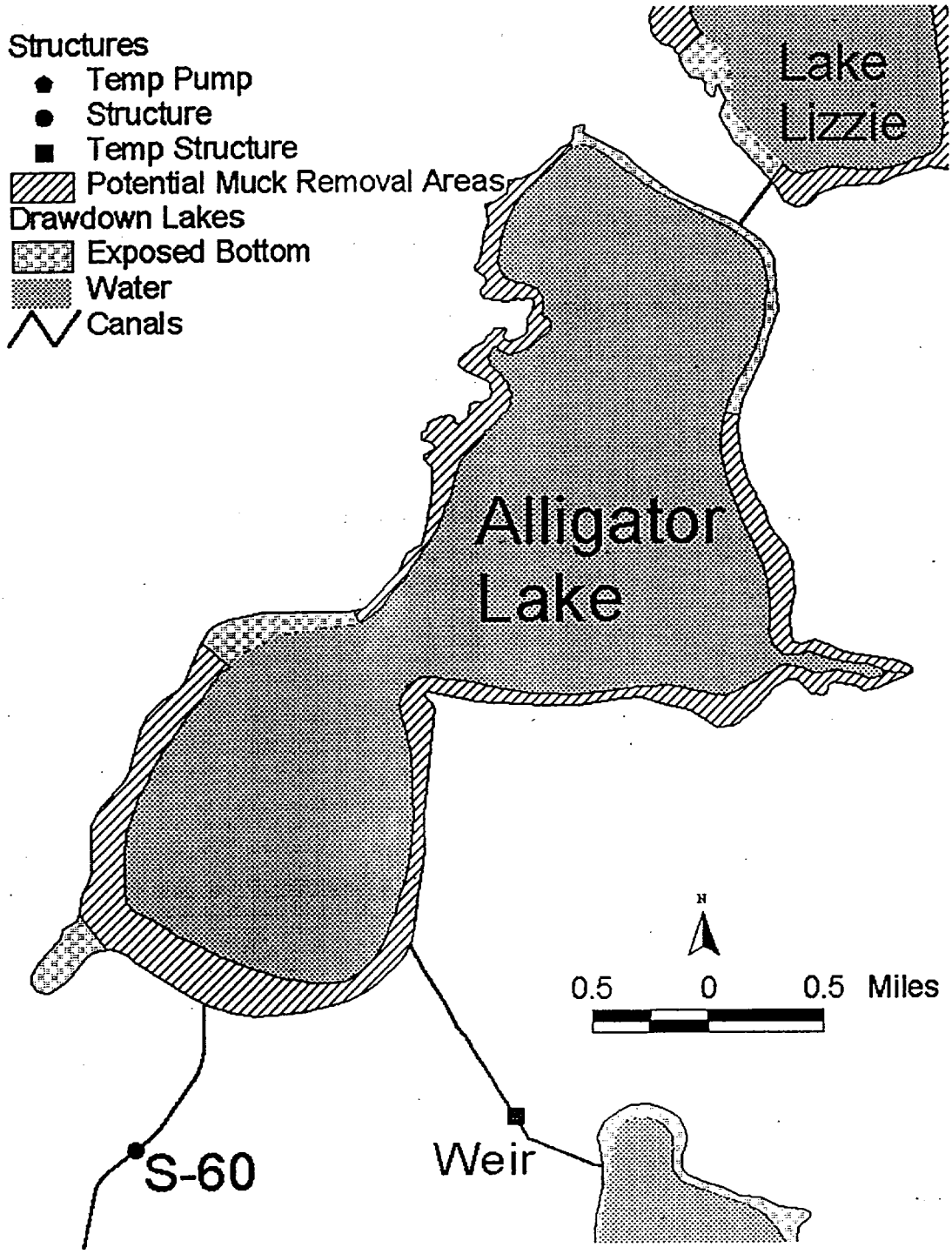


FIGURE 7

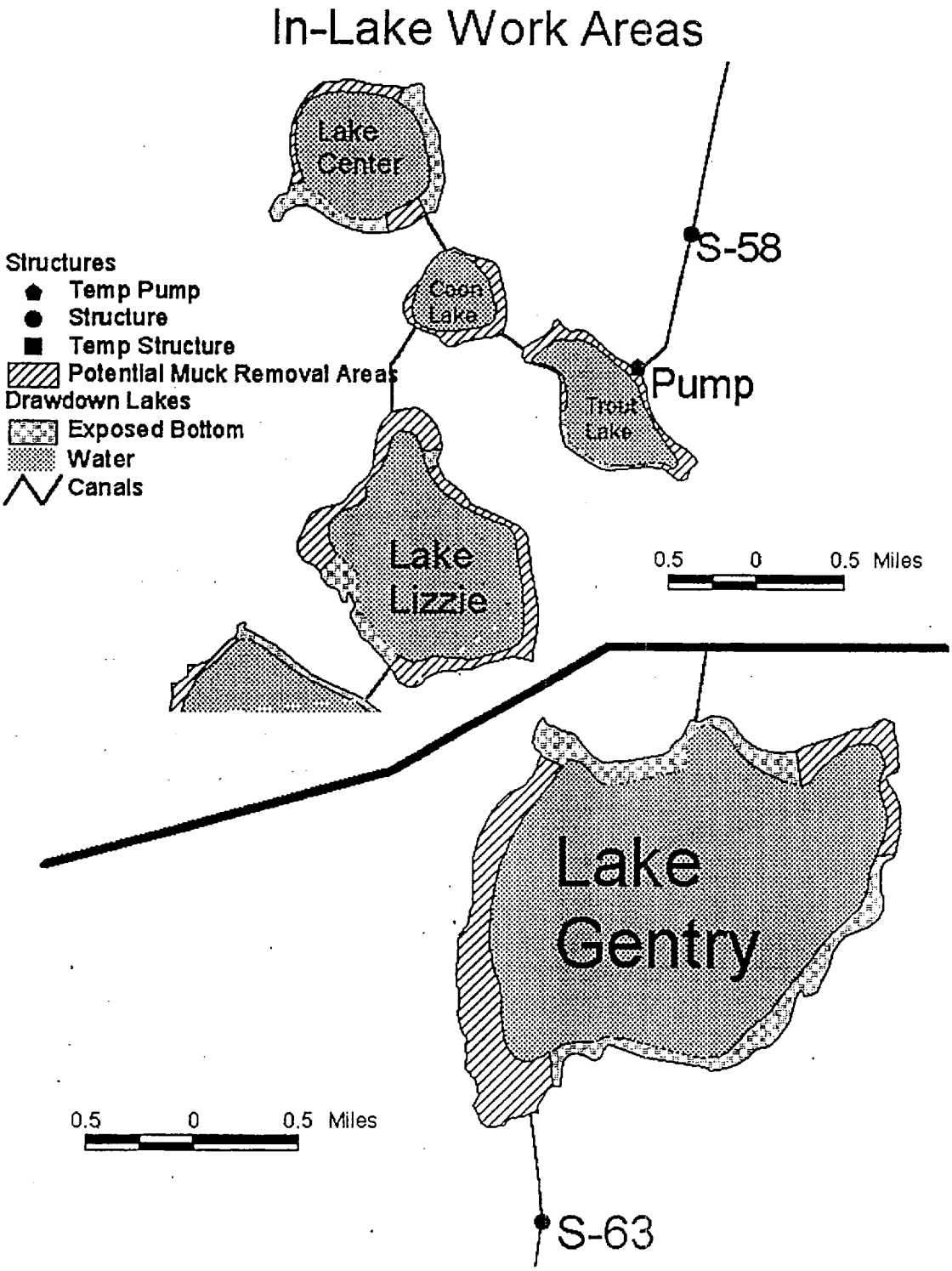
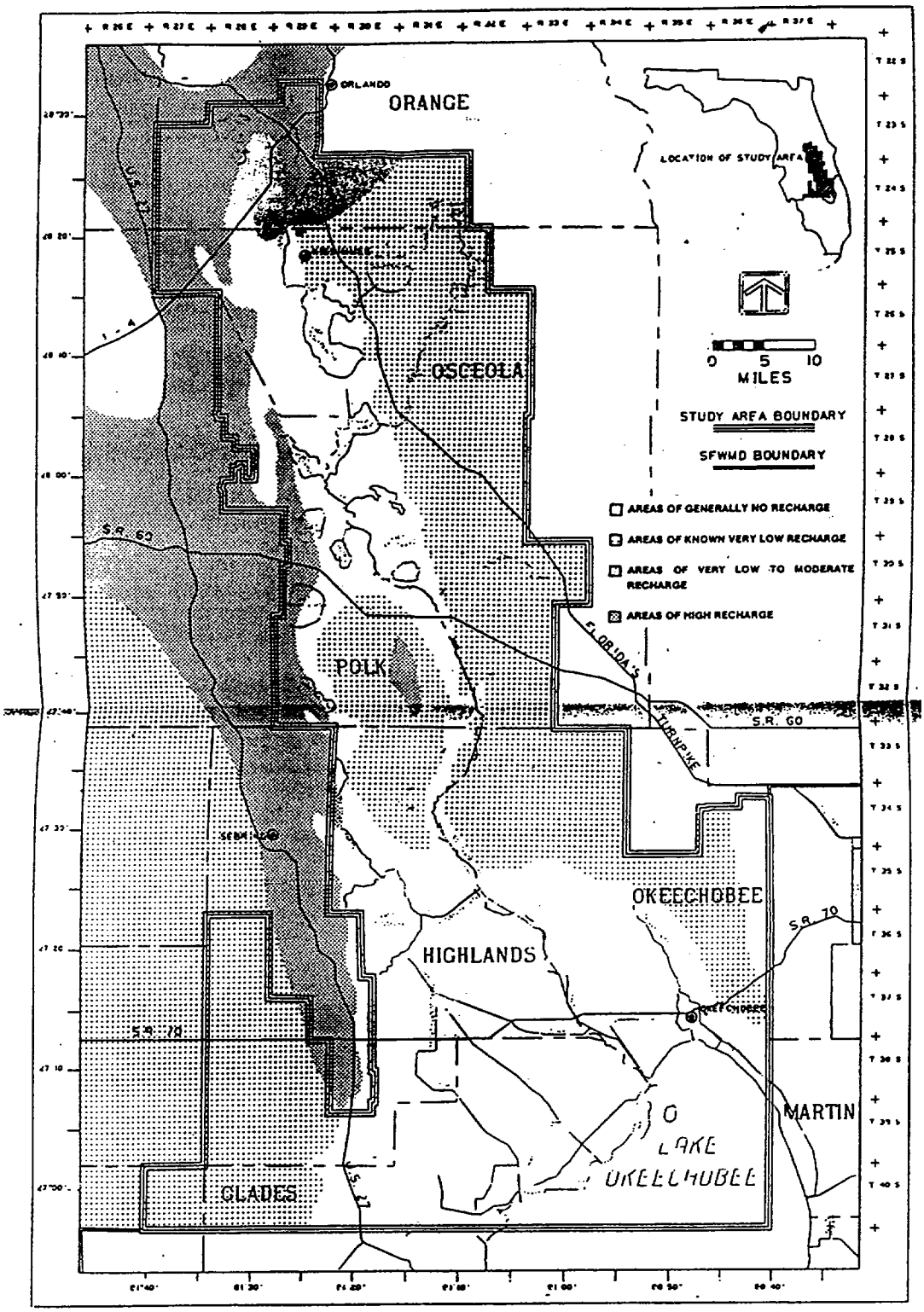

In-Lake Work Areas
Lake Center
Coon Lake
Trout Lake
S-58
Pump
Lake Lizzie
Lake Gentry
S-63
Structures
Temp Pump
Structure
Temp Structure
Potential Muck Removal Areas
Drawdown Lakes
Exposed Bottom
Water
Canals
0.5 0 0.5 Miles
0.5 0 0.5 Miles

FIGURE 8



APPENDIX VI AREAS OF NATURAL RECHARGE TO THE FLORIDAN AQUIFER SYSTEM (FROM STEWART, 1980)

VI-1

FIGURE 9

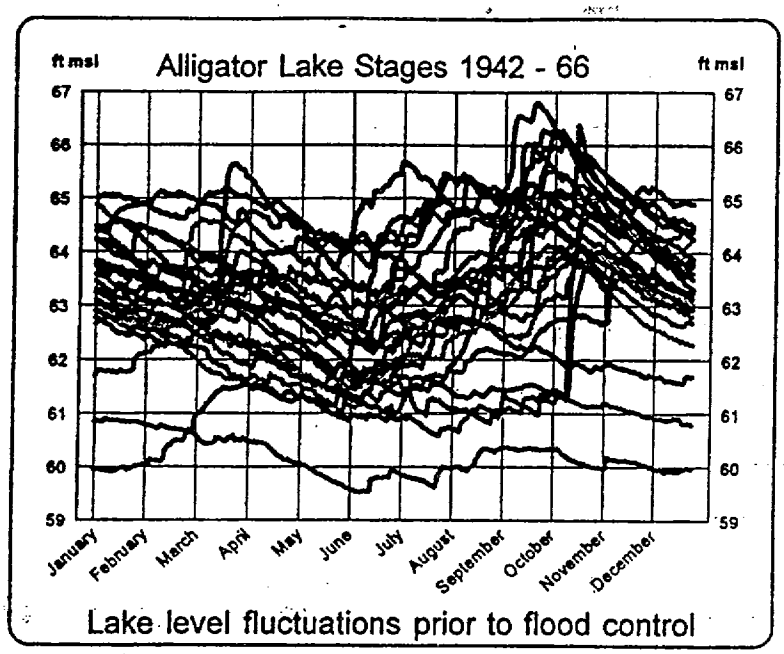


FIGURE 10

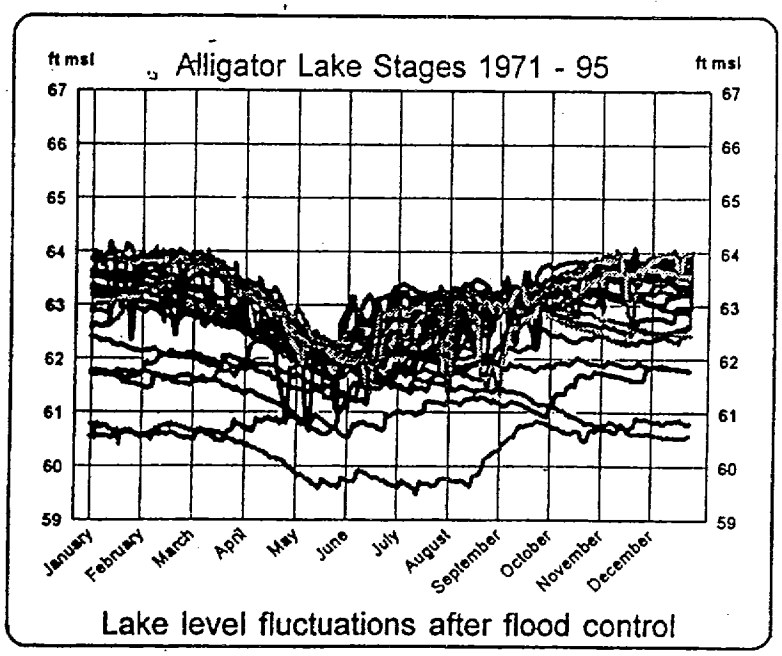


FIGURE 11

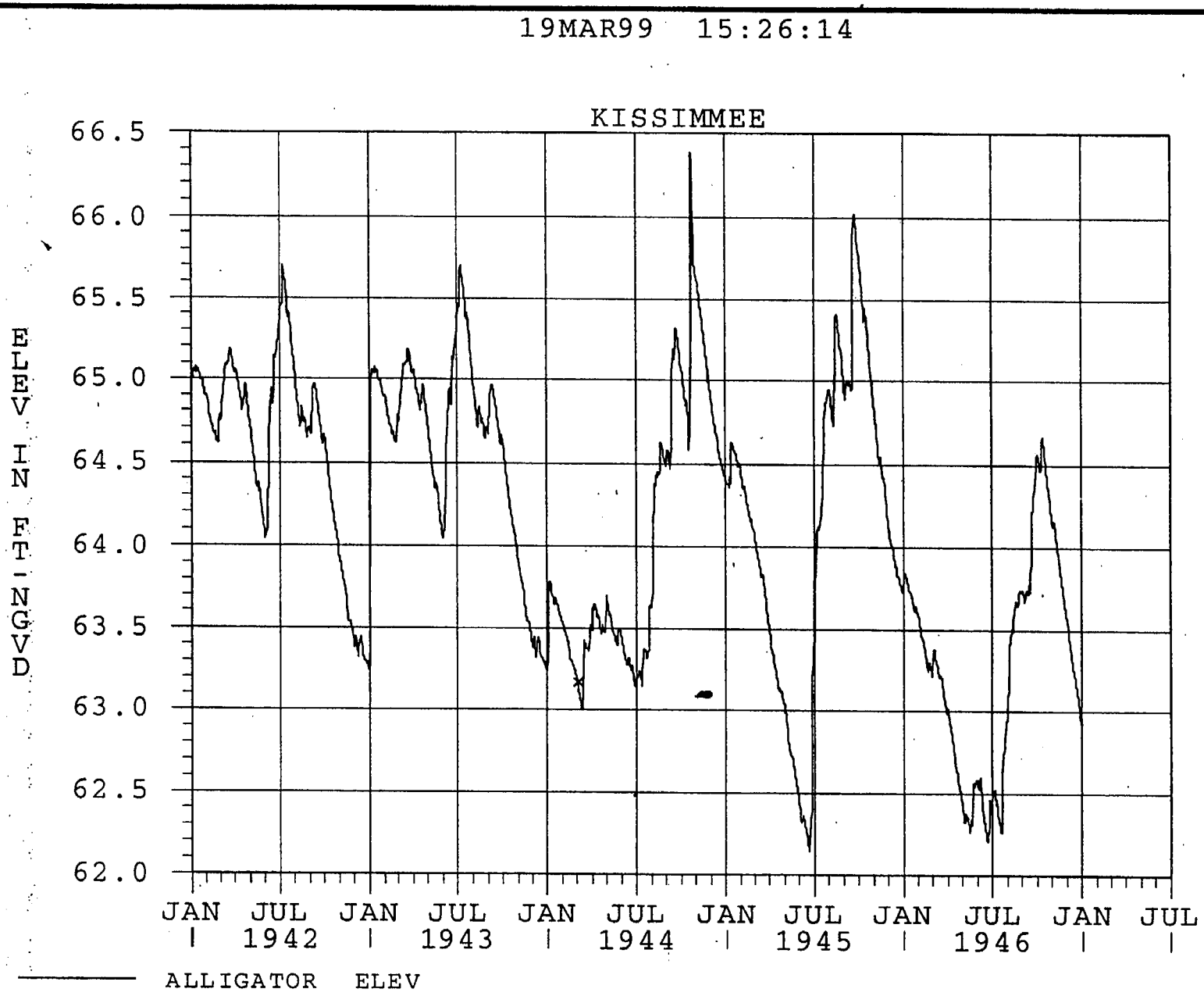

19MAR99 15:26:14
KISSIMMEE
ELEV IN FT-NGVD
66.5
66.0
65.5
65.0
64.5
64.0
63.5
63.0
62.5
62.0
JAN
JUL
1942
JAN
JUL
1943
JAN
JUL
1944
JAN
JUL
1945
JAN
JUL
1946
JAN
JUL
ALLIGATOR ELEV

FIGURE 12a

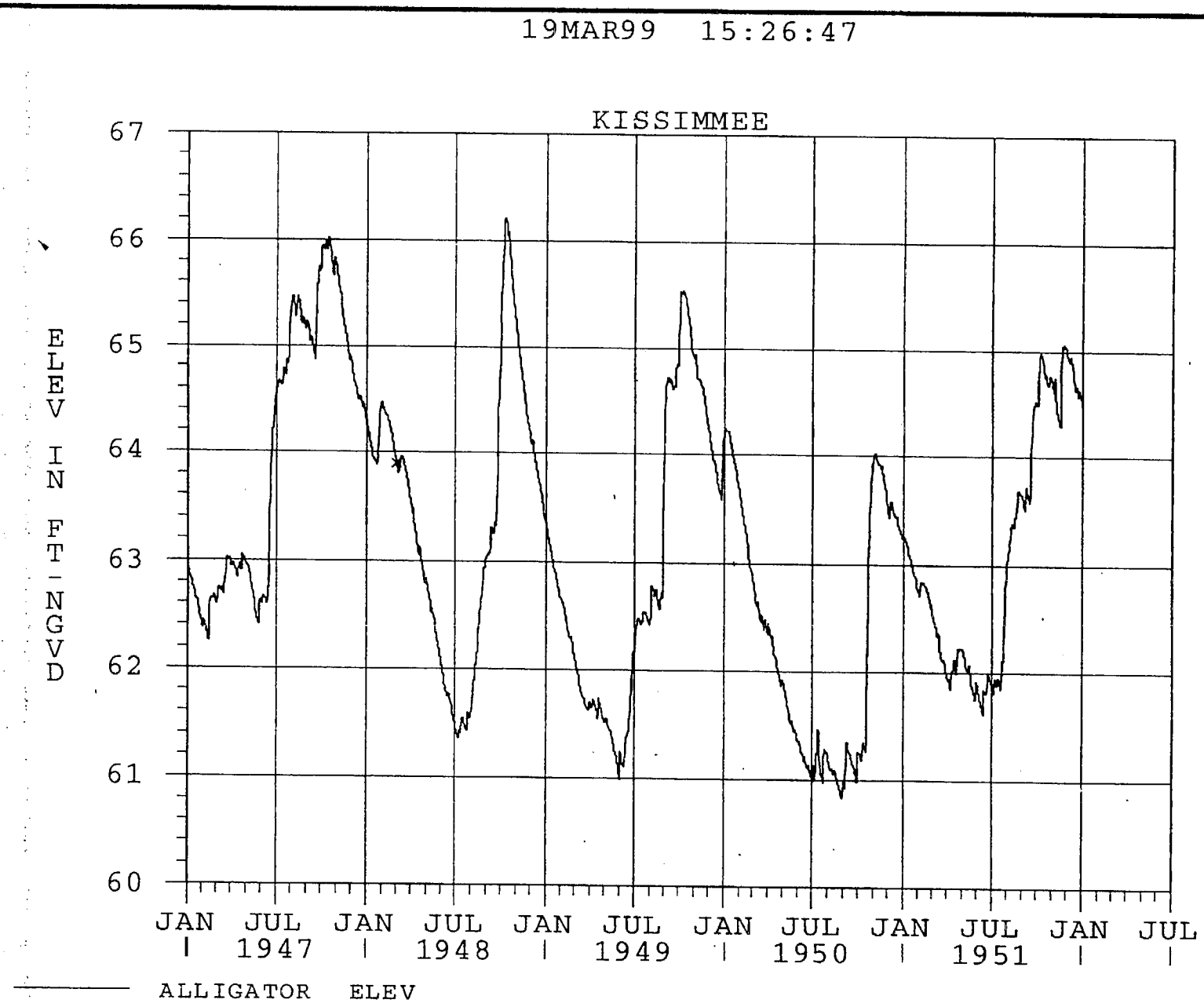

19MAR99 15:26:47
KISSIMMEE
ELEV IN FT-NGVD
67
66
65
64
63
62
61
60
JAN
JUL 1947
JAN
JUL 1948
JAN
JUL 1949
JAN
JUL 1950
JAN
JUL 1951
JAN
JUL
ALLIGATOR ELEV

FIGURE 12b

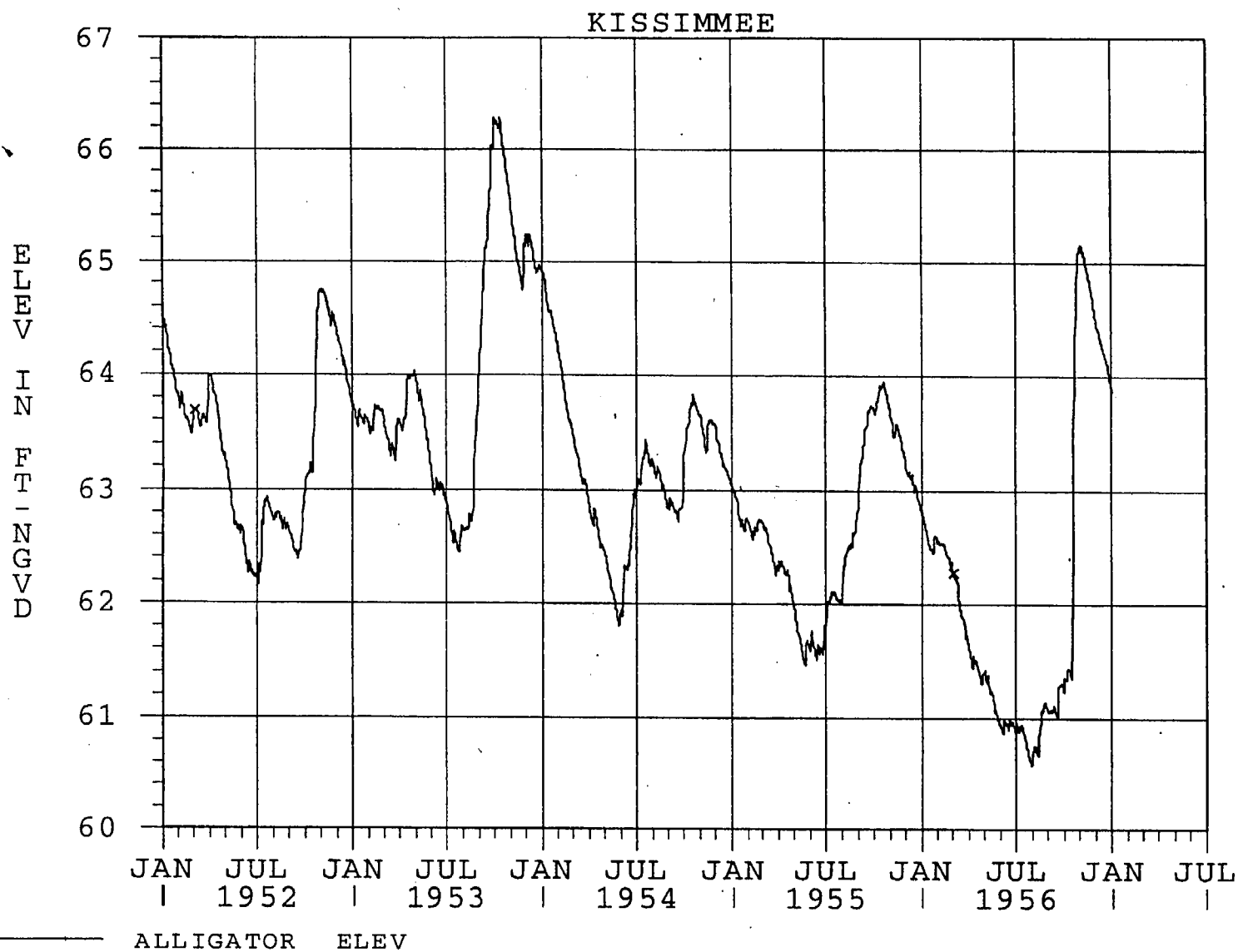

19MAR99 15:27:07
KISSIMMEE
ELEV IN FT-NGVD
67
66
65
64
63
62
61
60
JAN
JUL
1952
JAN
JUL
1953
JAN
JUL
1954
JAN
JUL
1955
JAN
JUL
1956
JAN
JUL
ALLIGATOR ELEV

FIGURE 12c

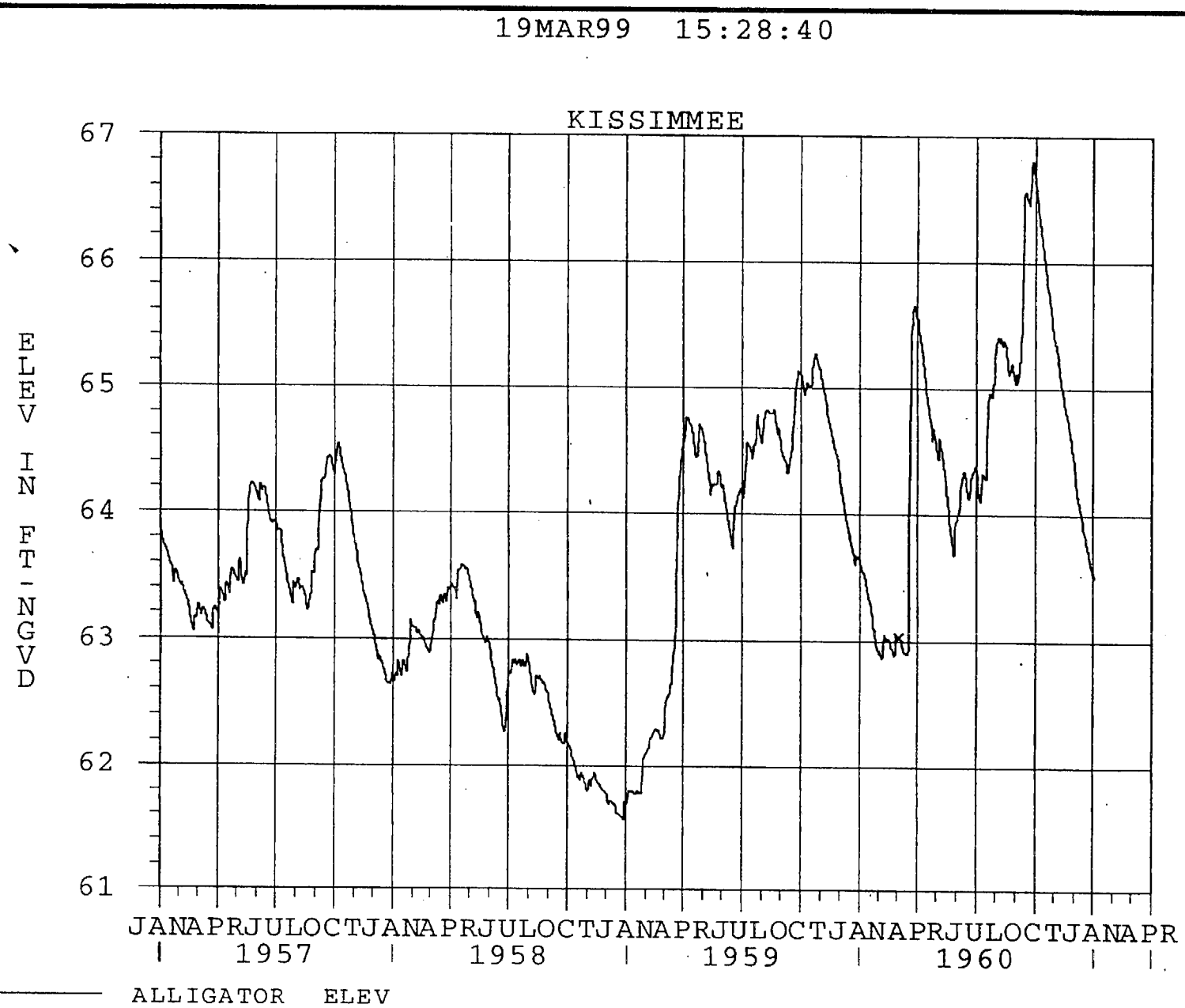

19MAR99 15:28:40
KISSIMMEE
ELEV IN FT-NGVD
67
66
65
64
63
62
61
JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN APR
1957
1958
1959
1960
ALLIGATOR ELEV

FIGURE 12d

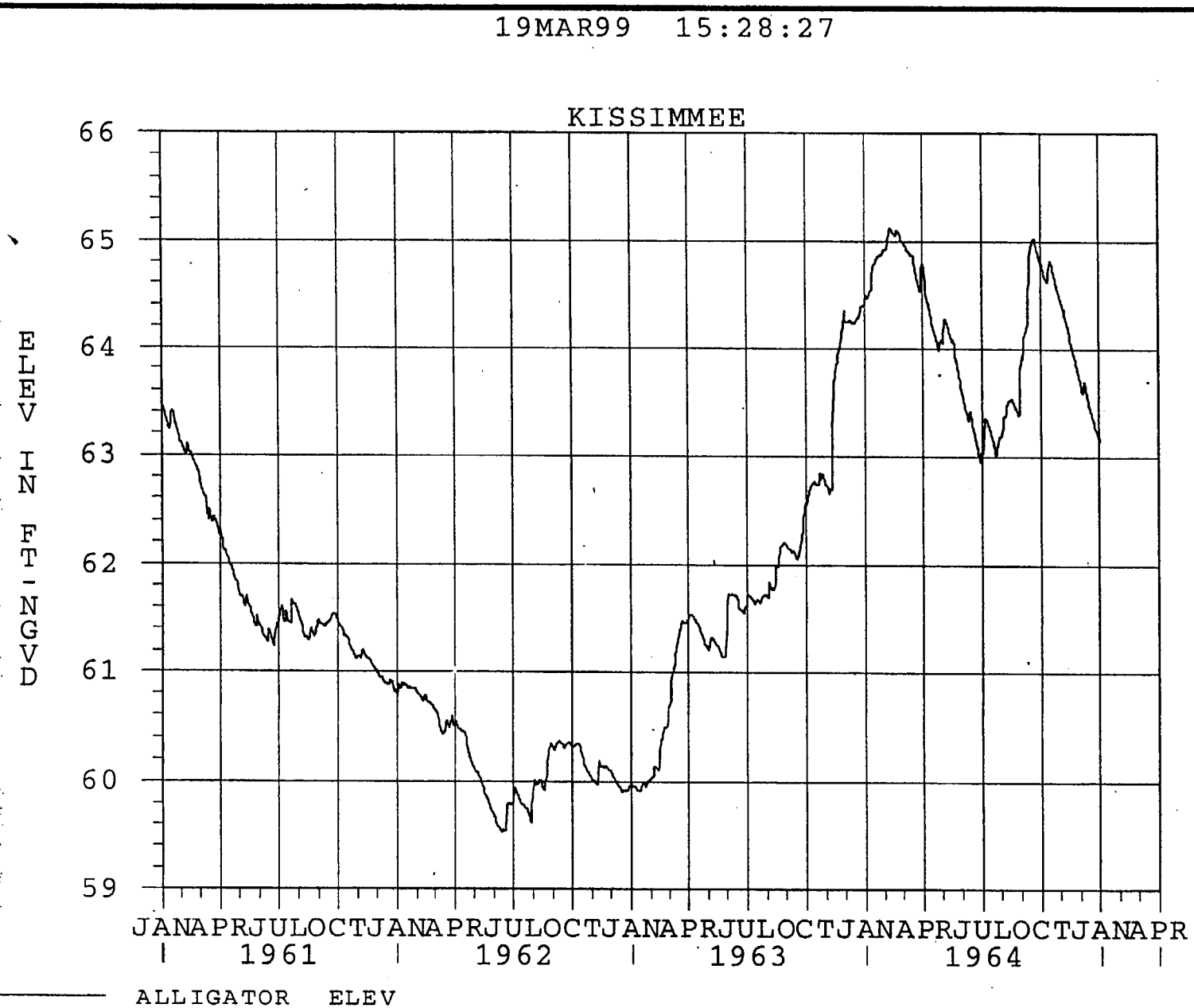

19MAR99 15:28:27
KISSIMMEE
ELEV IN FT-NGVD
66
65
64
63
62
61
60
59
JANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPR
1961
1962
1963
1964
ALLIGATOR ELEV

FIGURE 12e

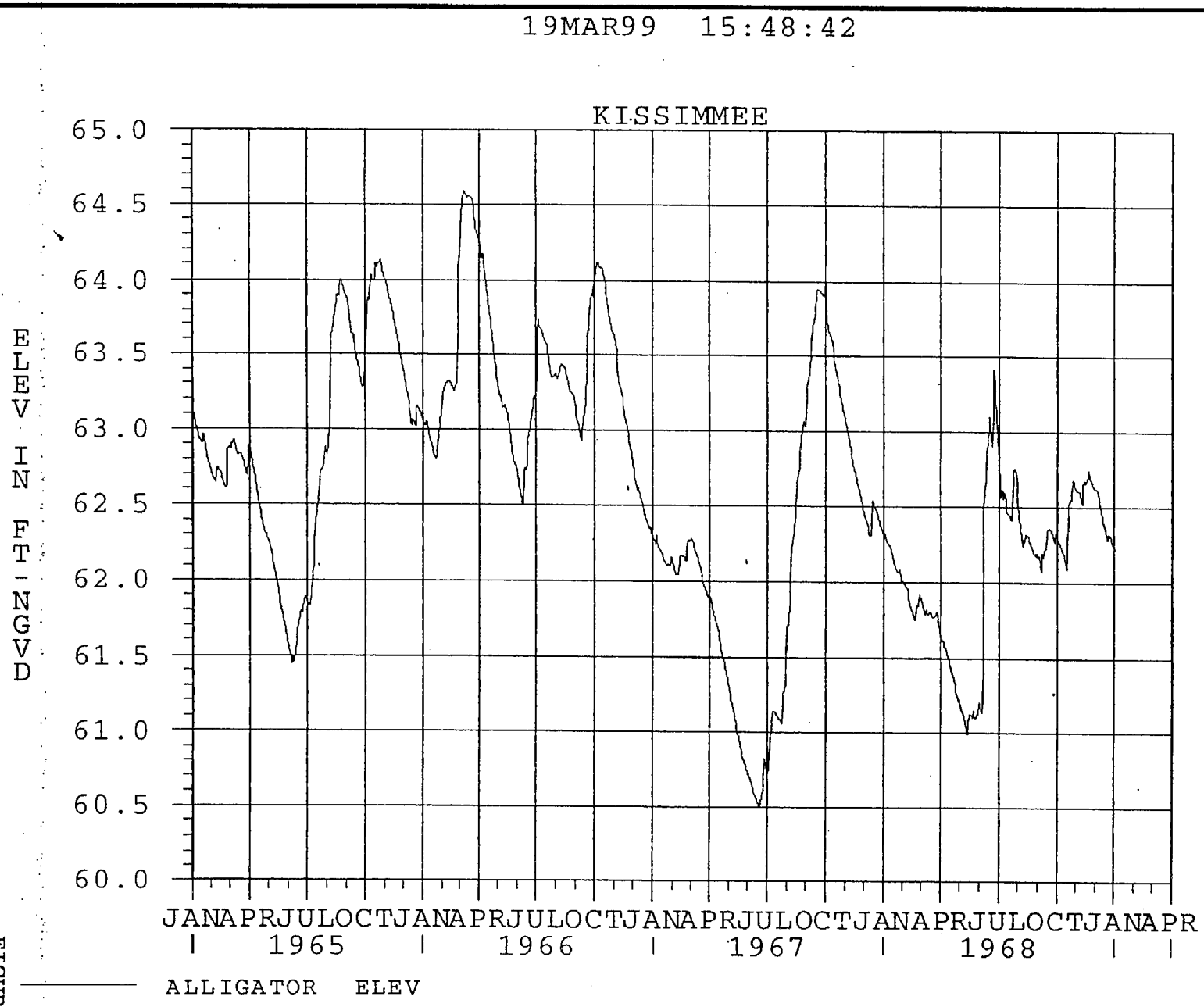

19MAR99 15:48:42
KISSIMMEE
ELEV IN FT-NGVD
65.0
64.5
64.0
63.5
63.0
62.5
62.0
61.5
61.0
60.5
60.0
JANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPR
1965
1966
1967
1968
ALLIGATOR ELEV

FIGURE 12f

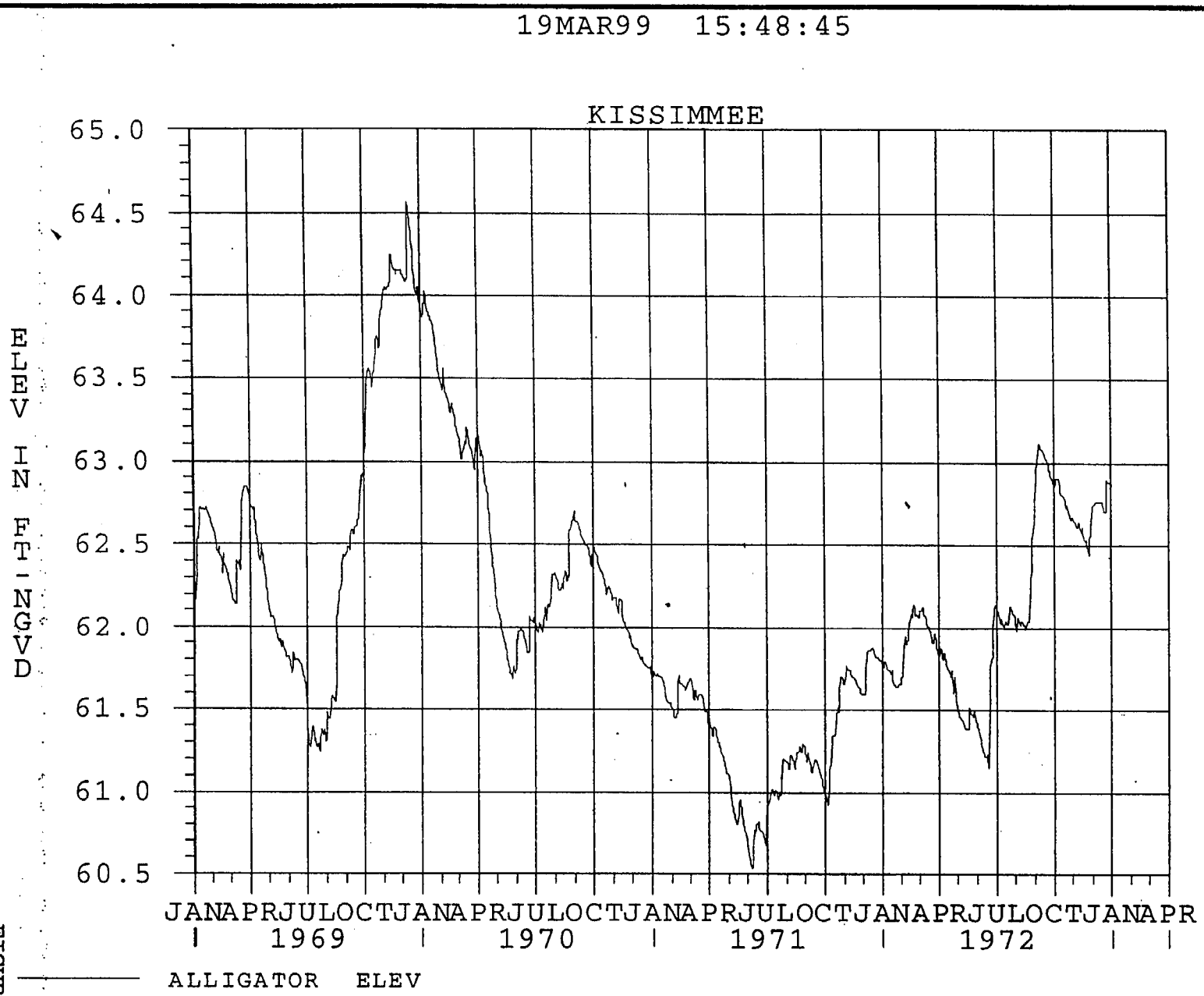

19MAR99 15:48:45
KISSIMMEE
ELEV IN FT-NGVD
65.0
64.5
64.0
63.5
63.0
62.5
62.0
61.5
61.0
60.5
JANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPR
1969
1970
1971
1972
ALLIGATOR ELEV

FIGURE 12g

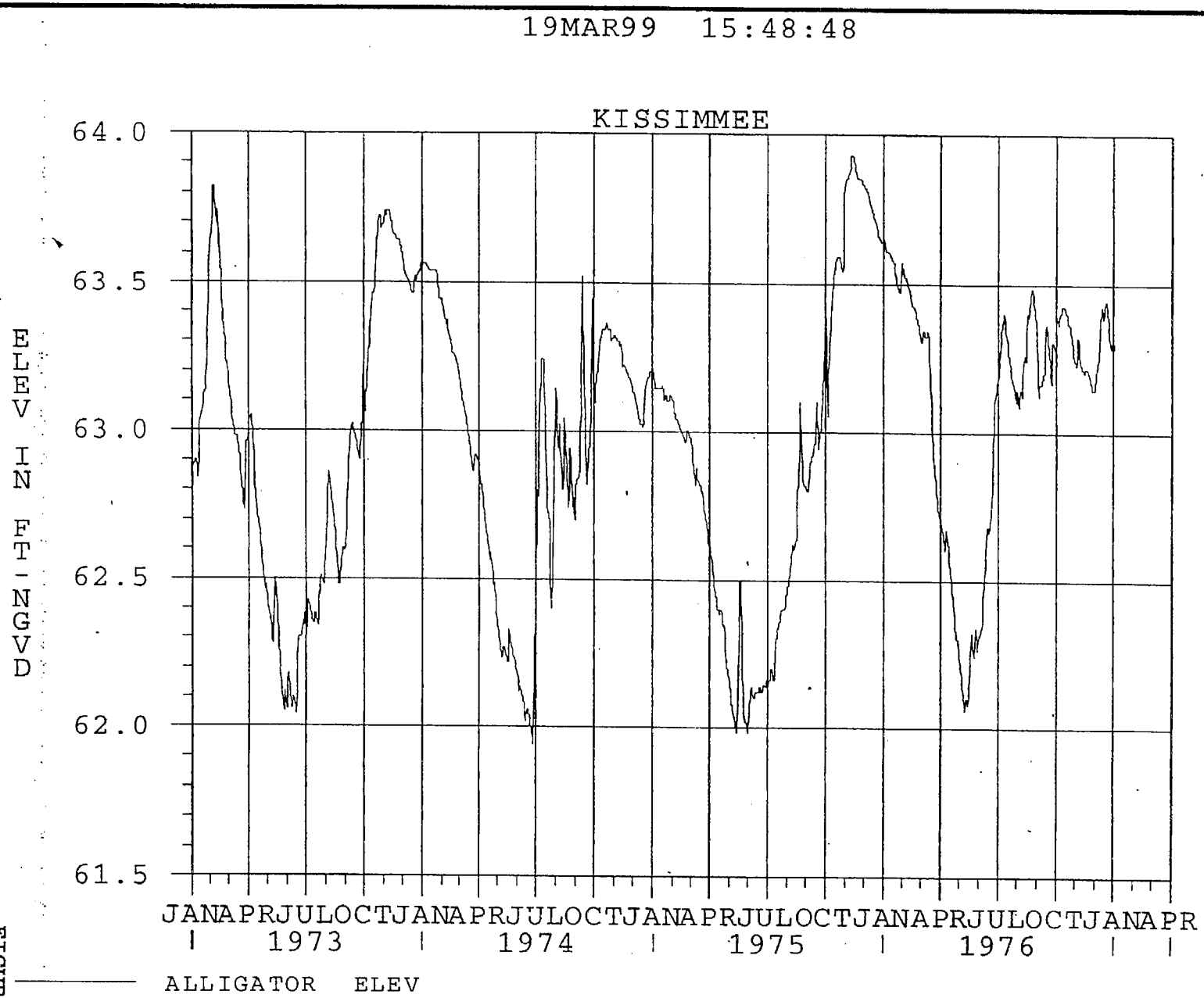

19MAR99 15:48:48
KISSIMMEE
64.0
63.5
63.0
62.5
62.0
61.5
ELEV IN FT-NGVD
JANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPRJULOCTJANAPR
1973
1974
1975
1976
ALLIGATOR ELEV

FIGURE 12h

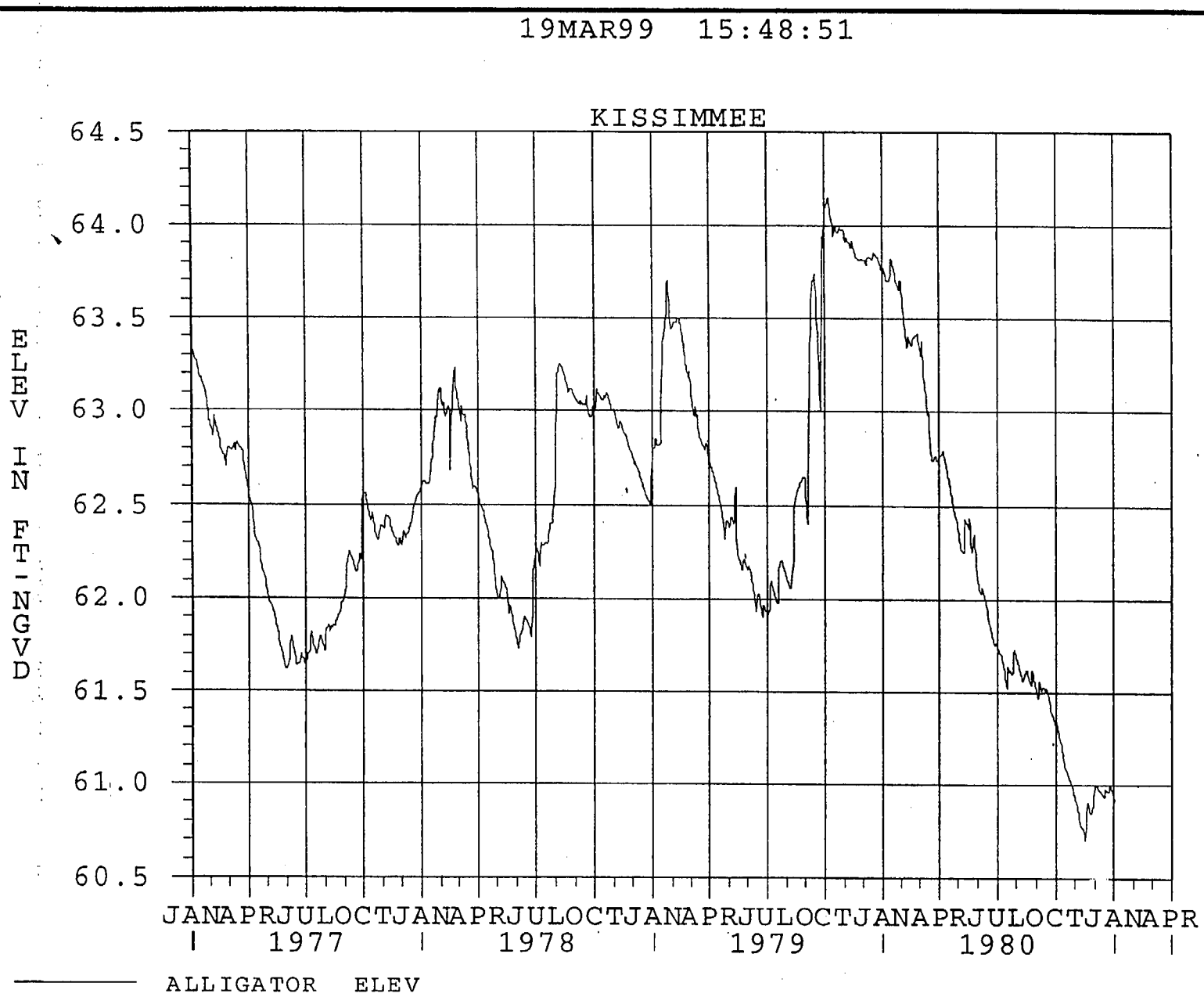

19MAR99 15:48:51
KISSIMMEE
ELEV IN FT-NGVD
64.5
64.0
63.5
63.0
62.5
62.0
61.5
61.0
60.5
JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN APR
1977
1978
1979
1980
ALLIGATOR ELEV

FIGURE 12i

19MAR99 15:48:56

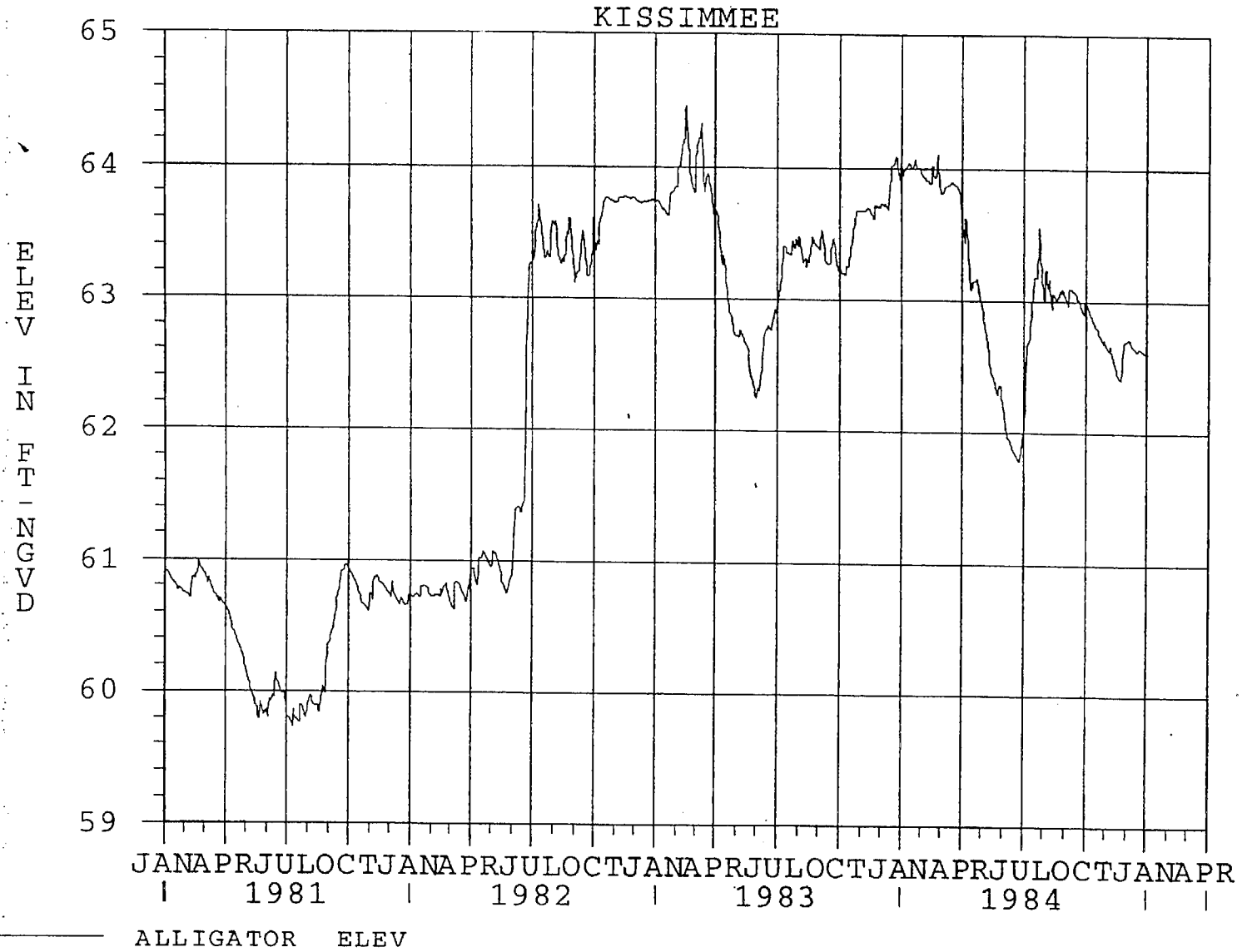


FIGURE 12j

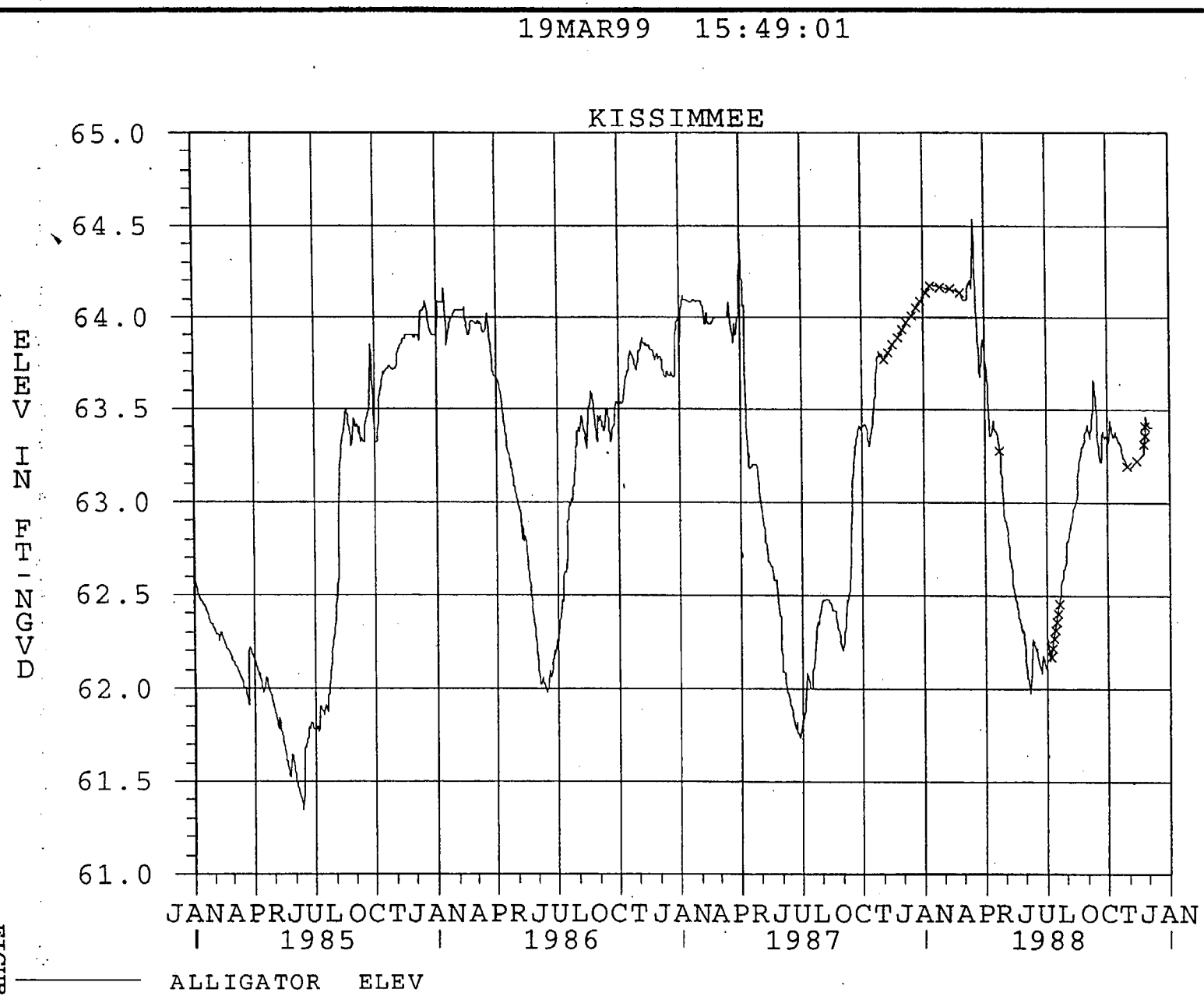

19MAR99 15:49:01
KISSIMMEE
ELEV IN FT-NGVD
65.0
64.5
64.0
63.5
63.0
62.5
62.0
61.5
61.0
JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN
1985
1986
1987
1988
ALLIGATOR ELEV

FIGURE 12k

19MAR99 15:49:04

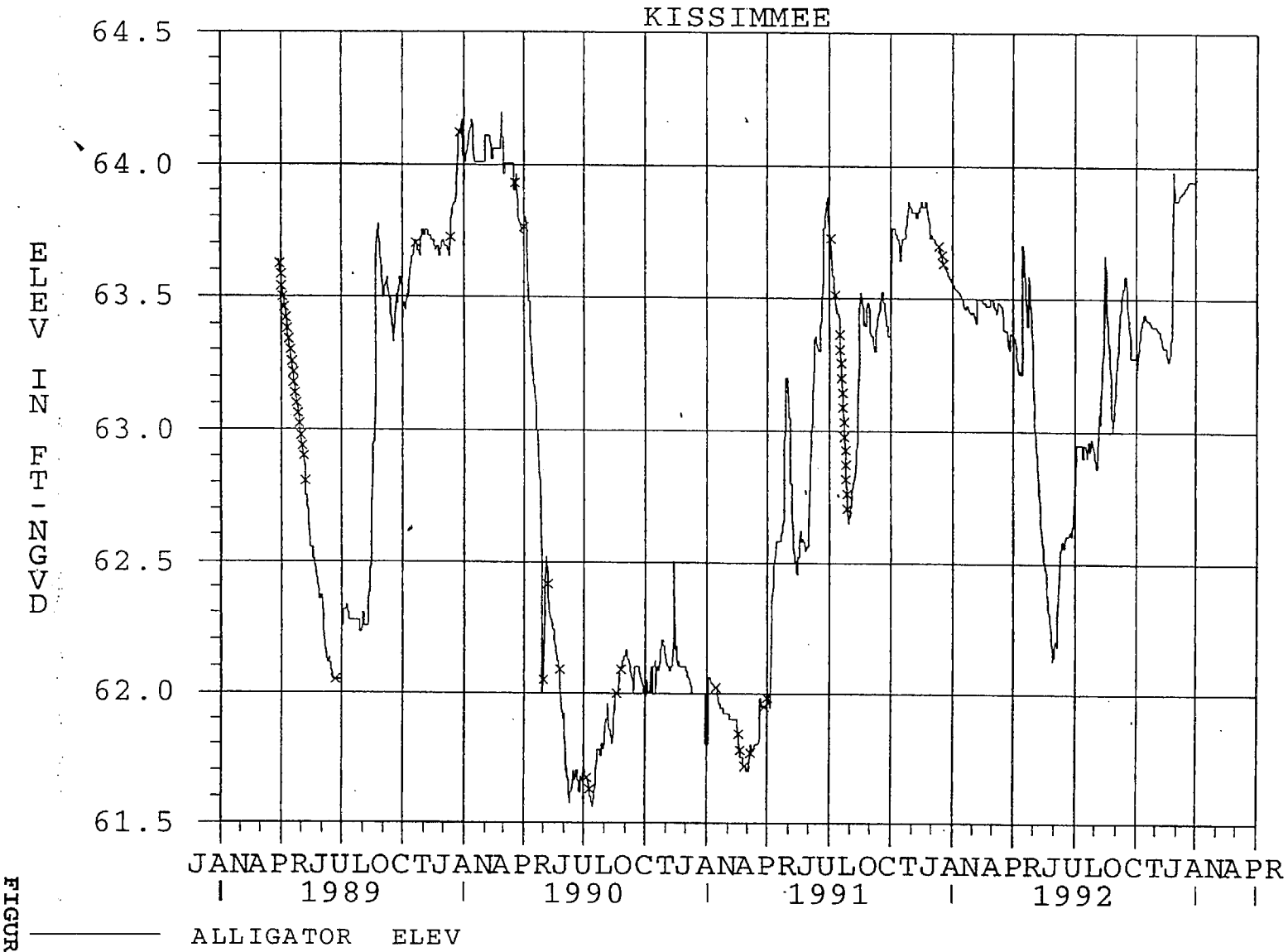


FIGURE 121

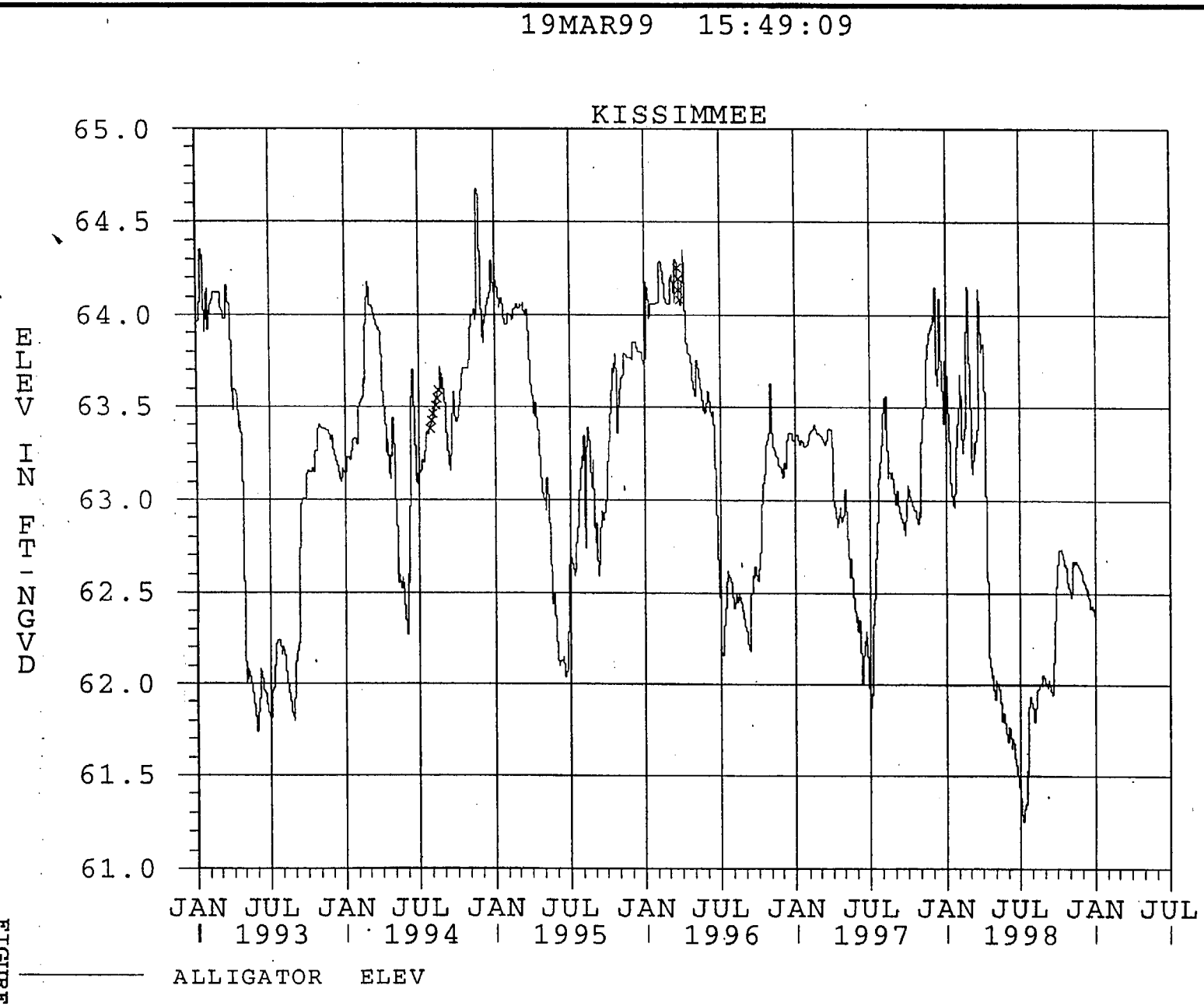

19MAR99 15:49:09
KISSIMMEE
ELEV IN FT-NGVD
65.0
64.5
64.0
63.5
63.0
62.5
62.0
61.5
61.0
JAN JUL JAN JUL JAN JUL JAN JUL JAN JUL JAN JUL JAN JUL
1993 1994 1995 1996 1997 1998
ALLIGATOR ELEV

FIGURE 12m

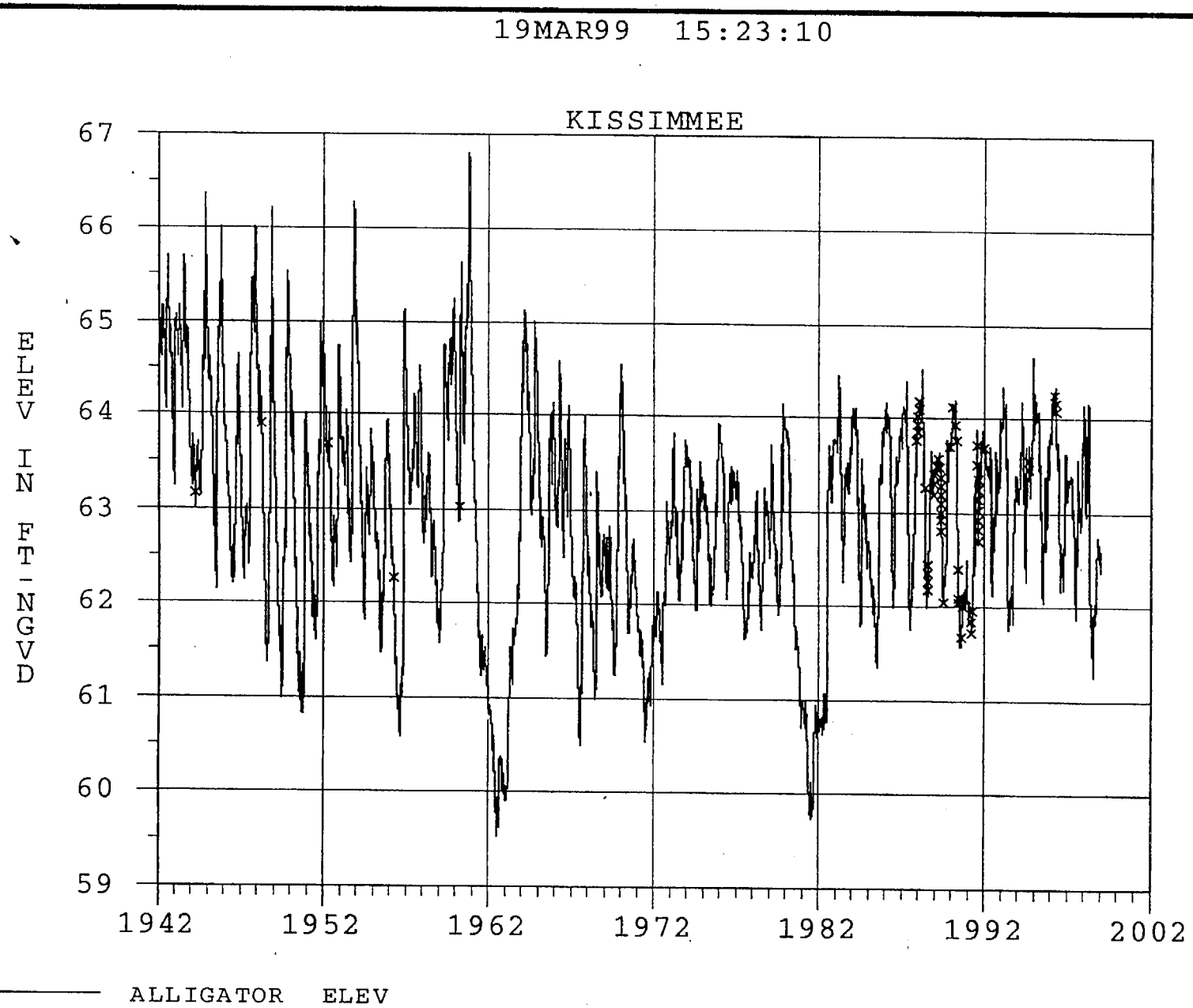

19MAR99 15:23:10
KISSIMMEE
ELEV IN FT-NGVD
67
66
65
64
63
62
61
60
59
1942
1952
1962
1972
1982
1992
2002
ALLIGATOR ELEV

FIGURE 13

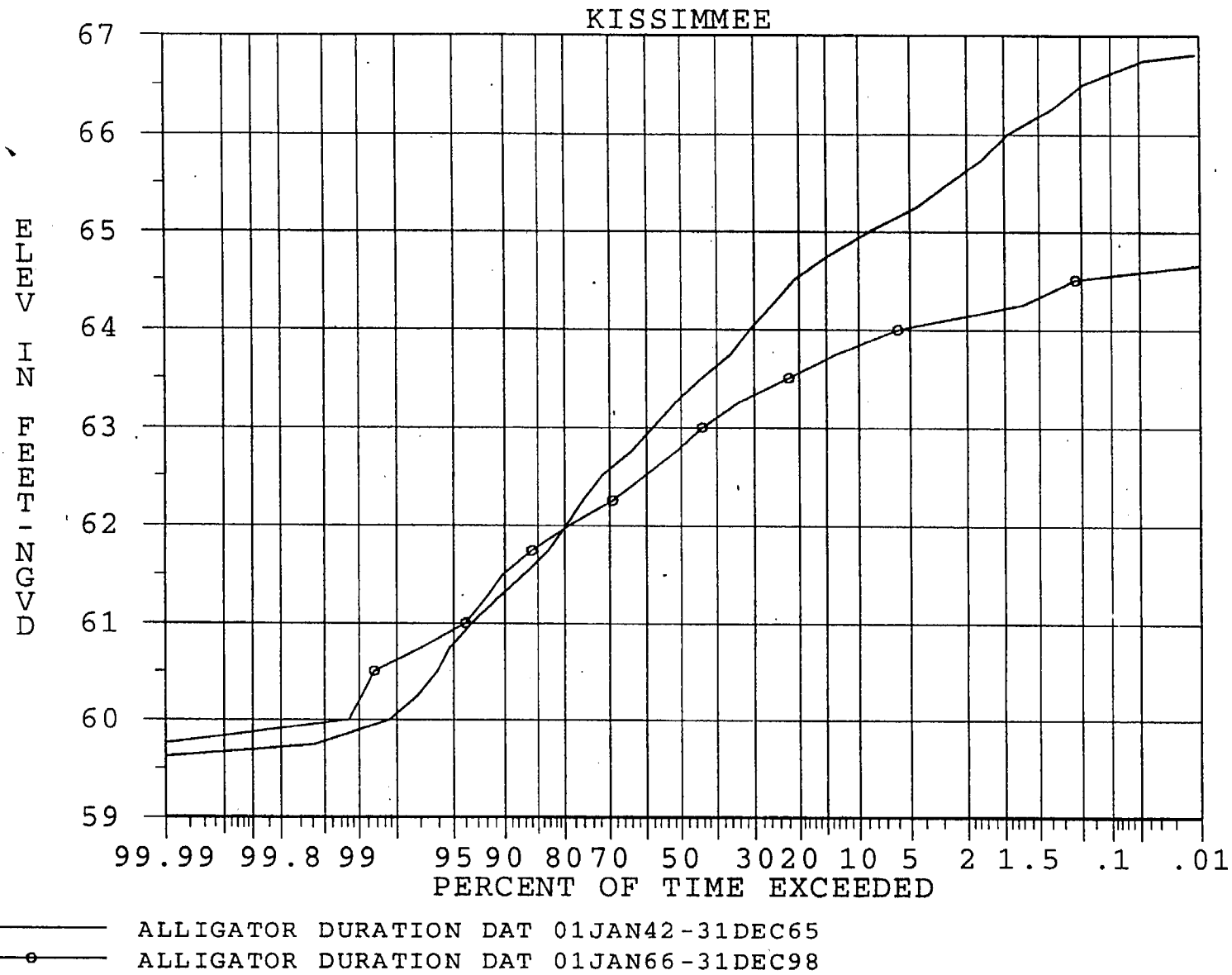
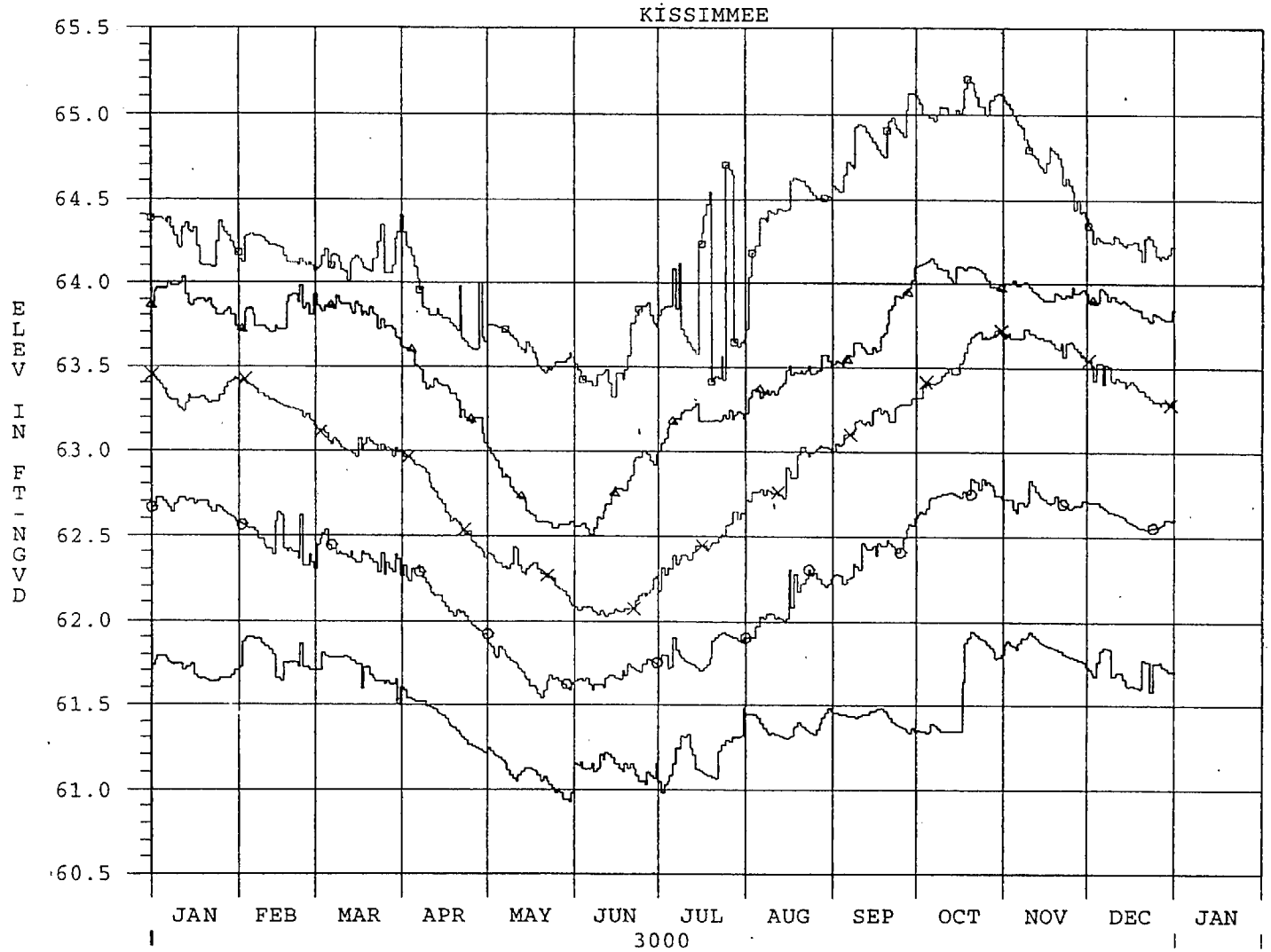

KISSIMMEE
ELEV IN FEET-NGVD
67
66
65
64
63
62
61
60
59
99.99 99.8 99 95 90 80 70 50 30 20 10 5 2 1.5 .1 .01
PERCENT OF TIME EXCEEDED
ALLIGATOR DURATION DAT 01JAN42-31DEC65
ALLIGATOR DURATION DAT 01JAN66-31DEC98

FIGURE 14

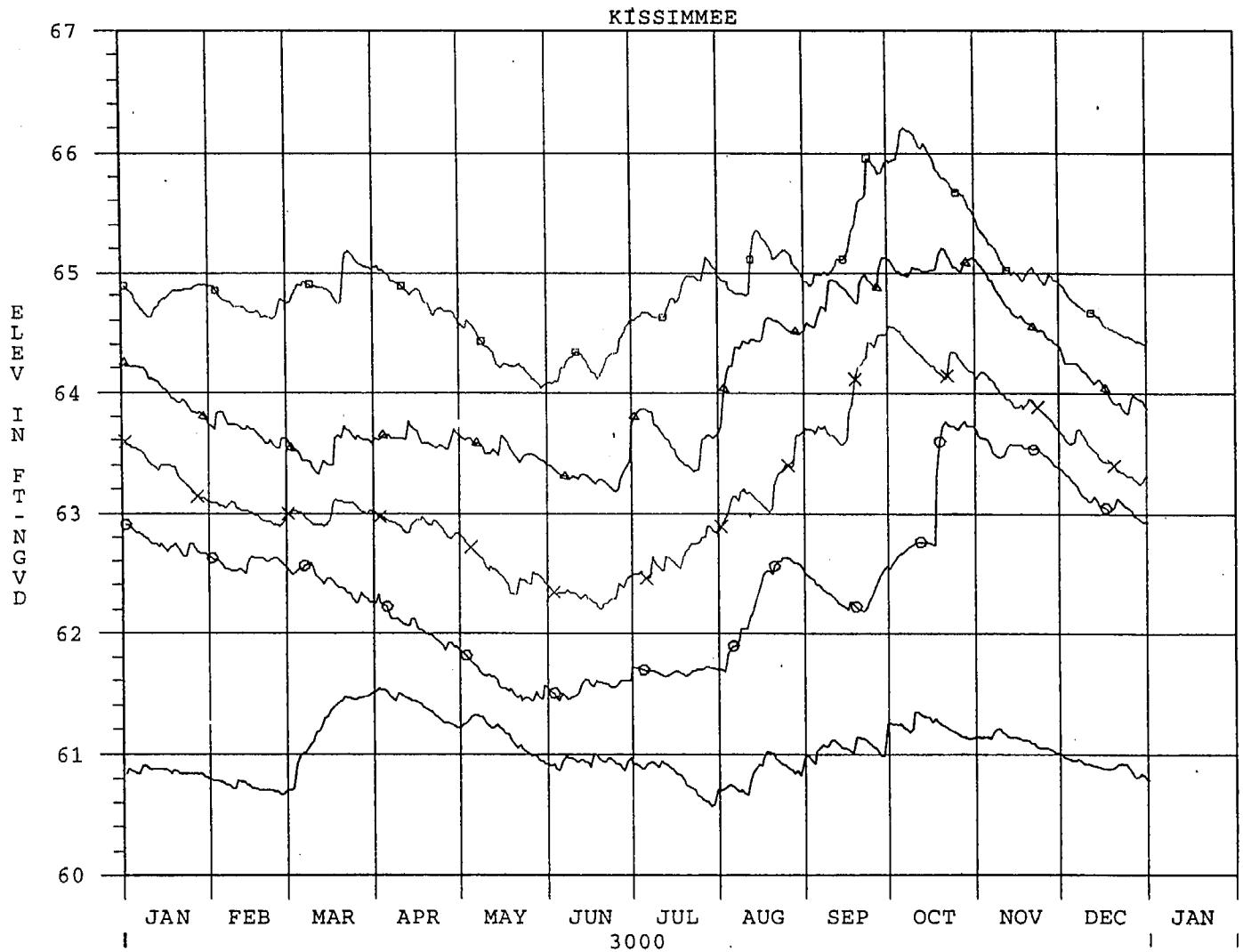
22MAR99 09:54:45



ALLIGATOR [01JAN1942-31DEC1998] ELEV-P10
ALLIGATOR [01JAN1942-31DEC1998] ELEV-P25
ALLIGATOR [01JAN1942-31DEC1998] ELEV-P50
ALLIGATOR [01JAN1942-31DEC1998] ELEV-P75
ALLIGATOR [01JAN1942-31DEC1998] ELEV-P90

FIGURE 15

22MAR99 09:55:10



ALLIGATOR [01JAN1942-31DEC1965] ELEV-P10
ALLIGATOR [01JAN1942-31DEC1965] ELEV-P25
ALLIGATOR [01JAN1942-31DEC1965] ELEV-P50
ALLIGATOR [01JAN1942-31DEC1965] ELEV-P75
ALLIGATOR [01JAN1942-31DEC1965] ELEV-P90

FIGURE 16

22MAR99 09:54:53

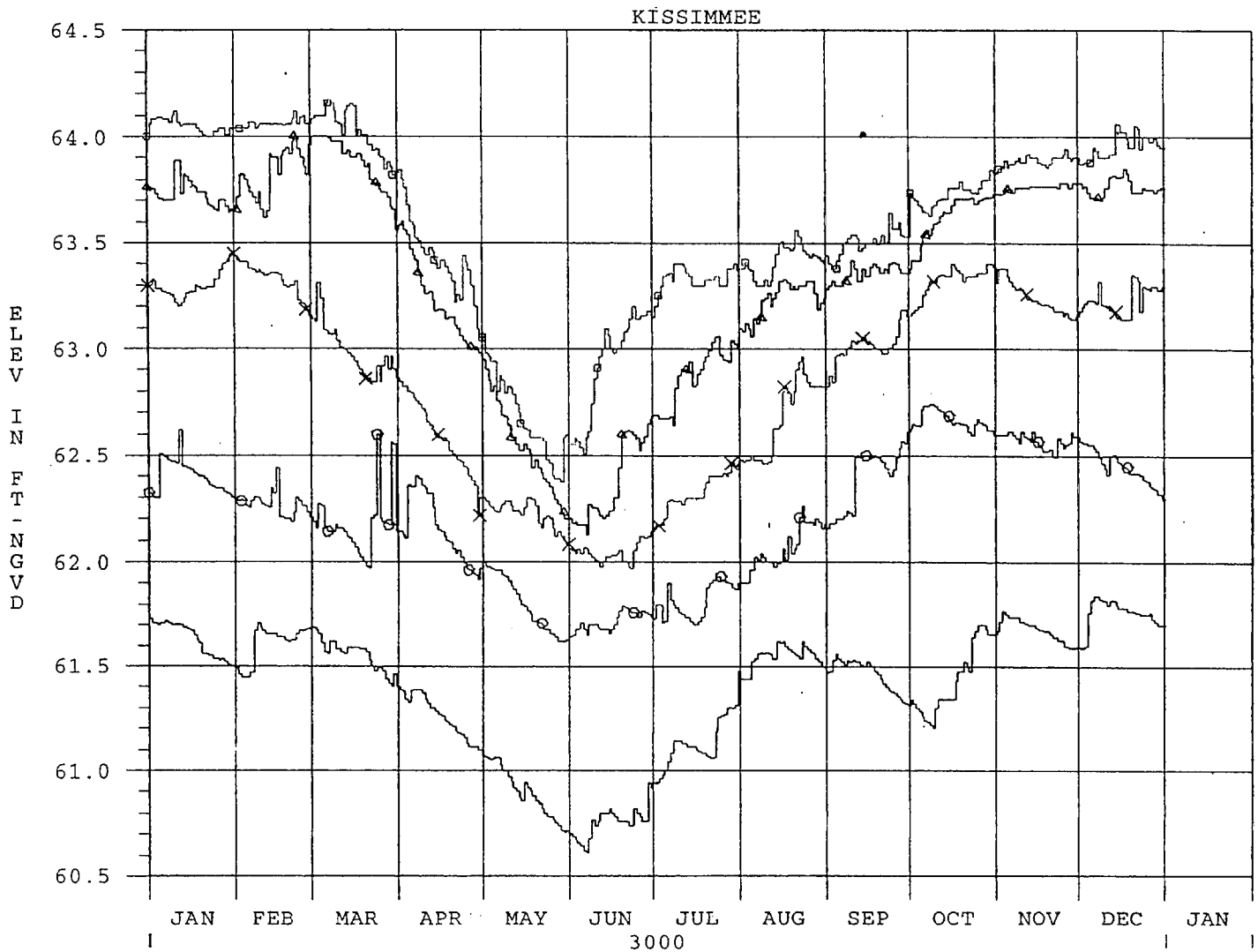


FIGURE 17

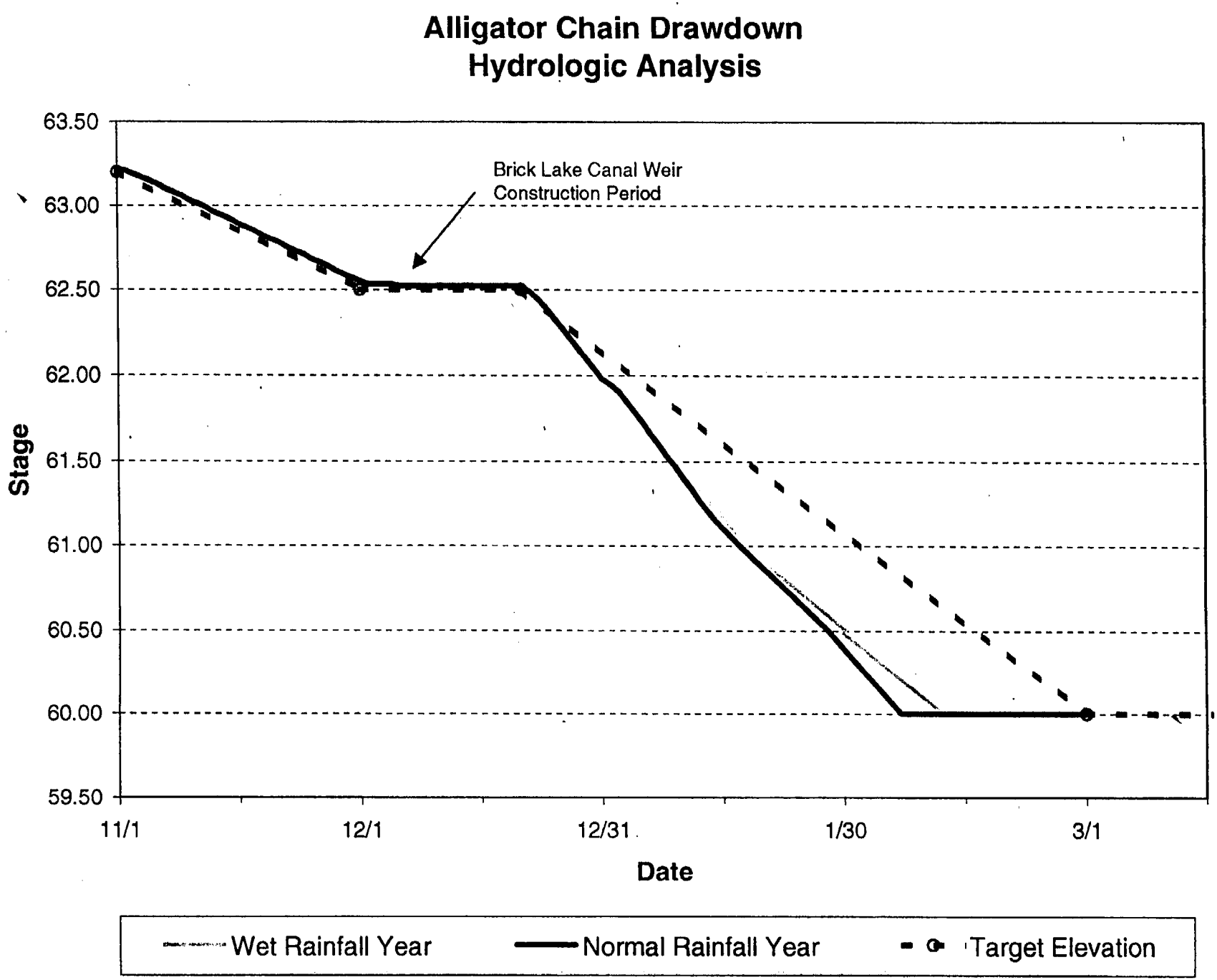

Alligator Chain Drawdown
Hydrologic Analysis
Brick Lake Canal Weir
Construction Period
Stage
63.50
63.00
62.50
62.00
61.50
61.00
60.50
60.00
59.50
11/1
12/1
12/31
1/30
3/1
Date
Wet Rainfall Year
Normal Rainfall Year
Target Elevation

FIGURE 18

Lake Gentry Drawdown Hydrologic Analysis

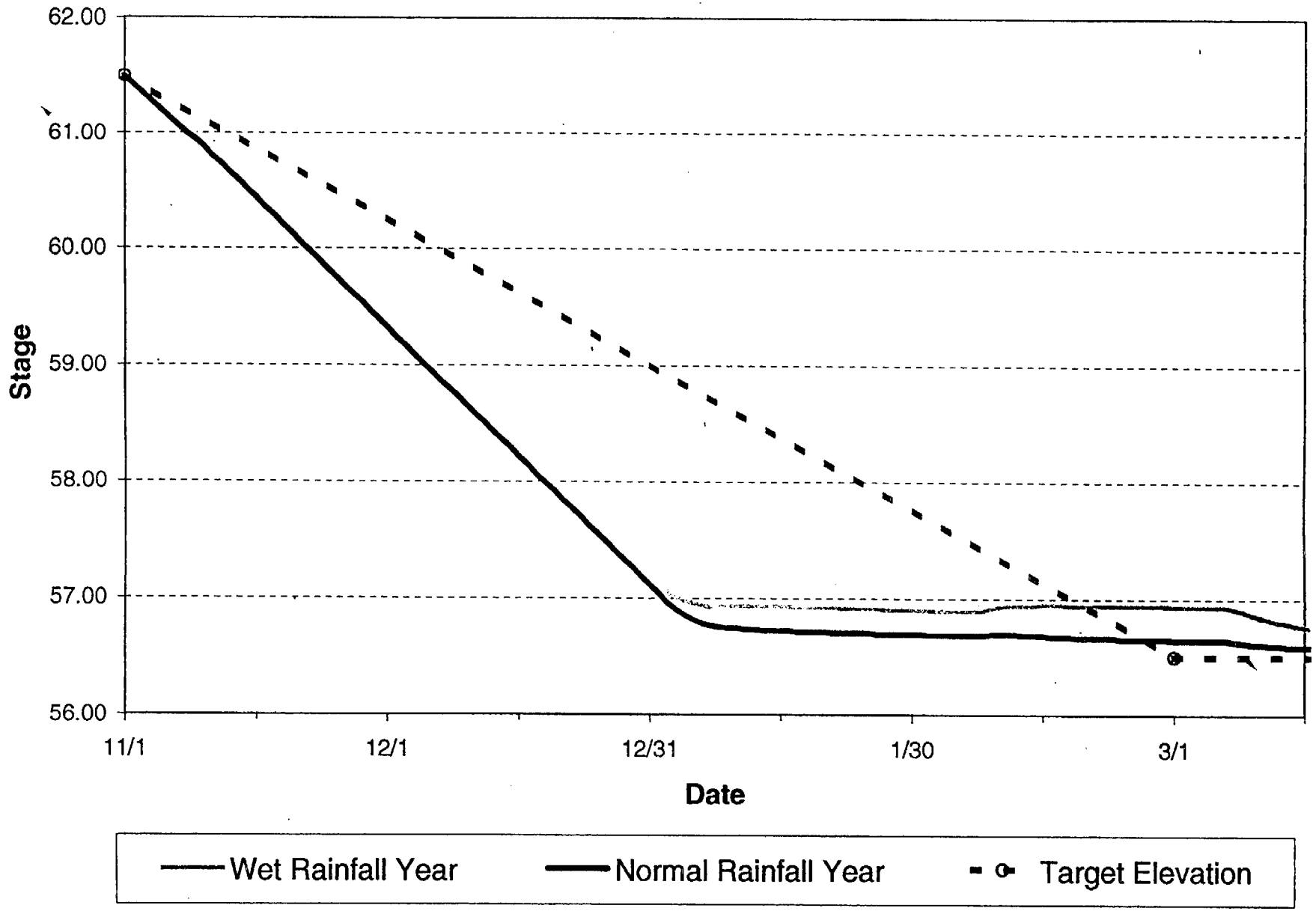


FIGURE 19

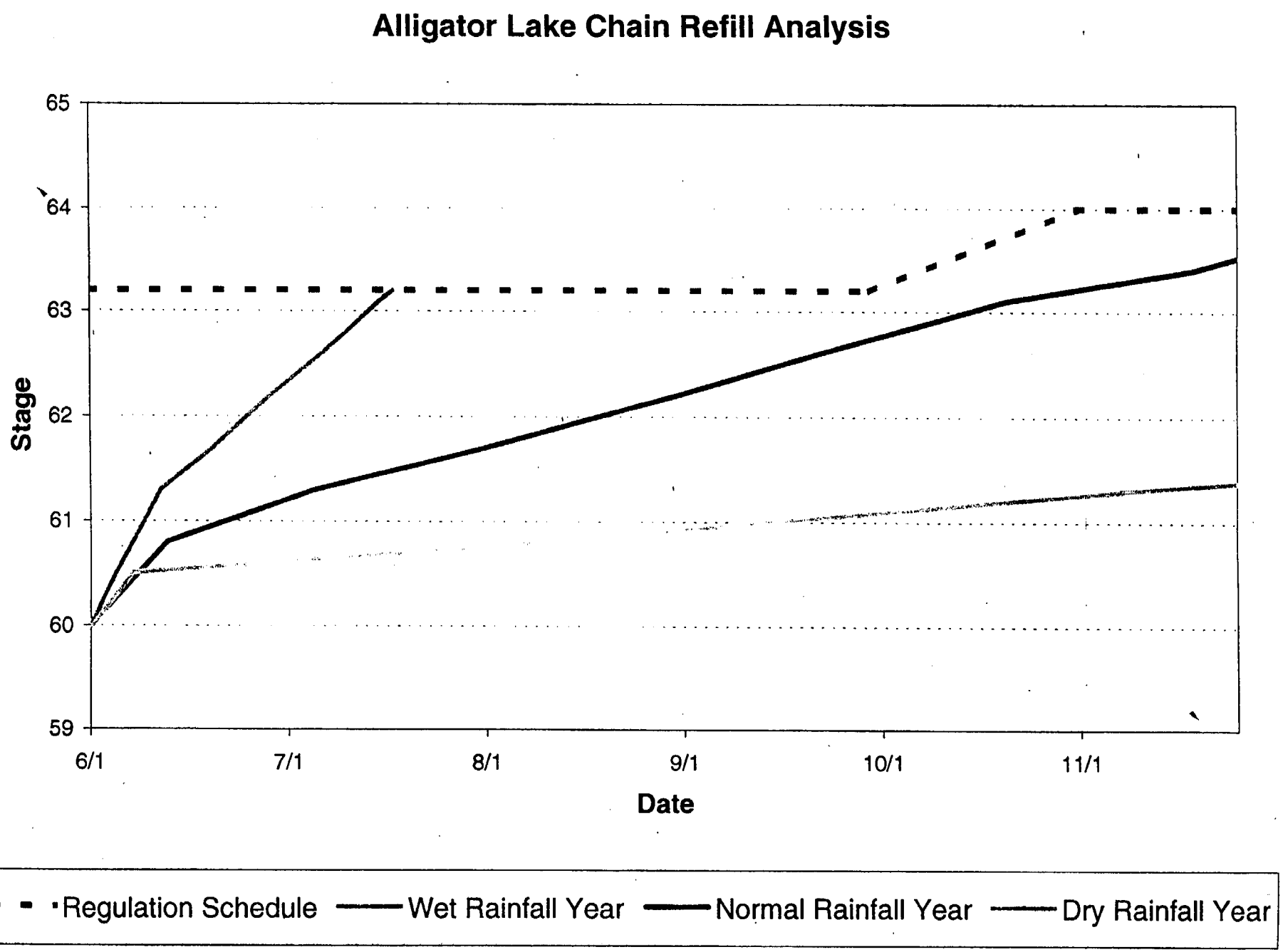

Alligator Lake Chain Refill Analysis
65
64
63
62
61
60
59
Stage
6/1
7/1
8/1
9/1
10/1
11/1
Date
Regulation Schedule
Wet Rainfall Year
Normal Rainfall Year
Dry Rainfall Year

FIGURE 20

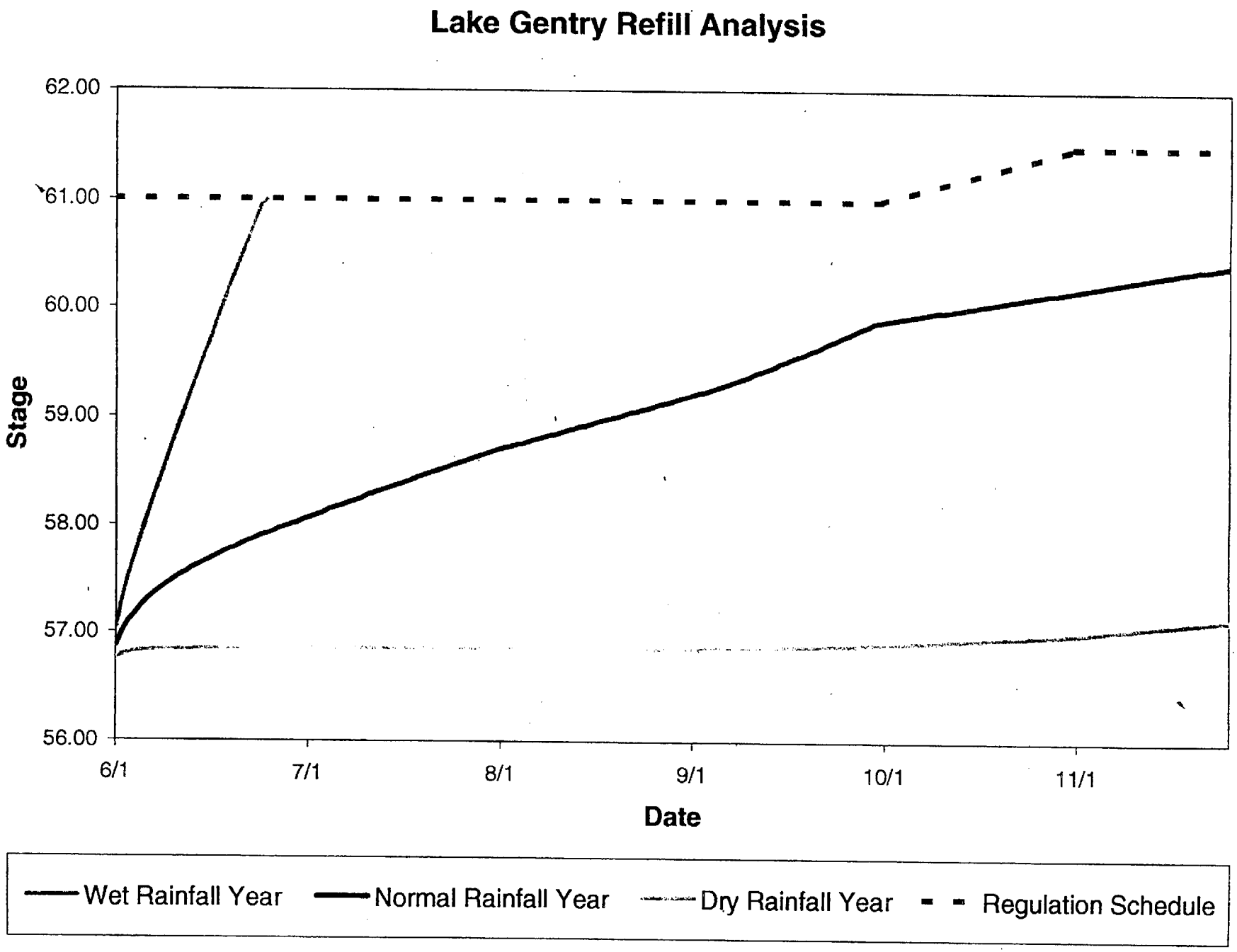

Lake Gentry Refill Analysis
62.00
61.00
60.00
59.00
58.00
57.00
56.00
Stage
6/1
7/1
8/1
9/1
10/1
11/1
Date
Wet Rainfall Year
Normal Rainfall Year
Dry Rainfall Year
Regulation Schedule

FIGURE 21

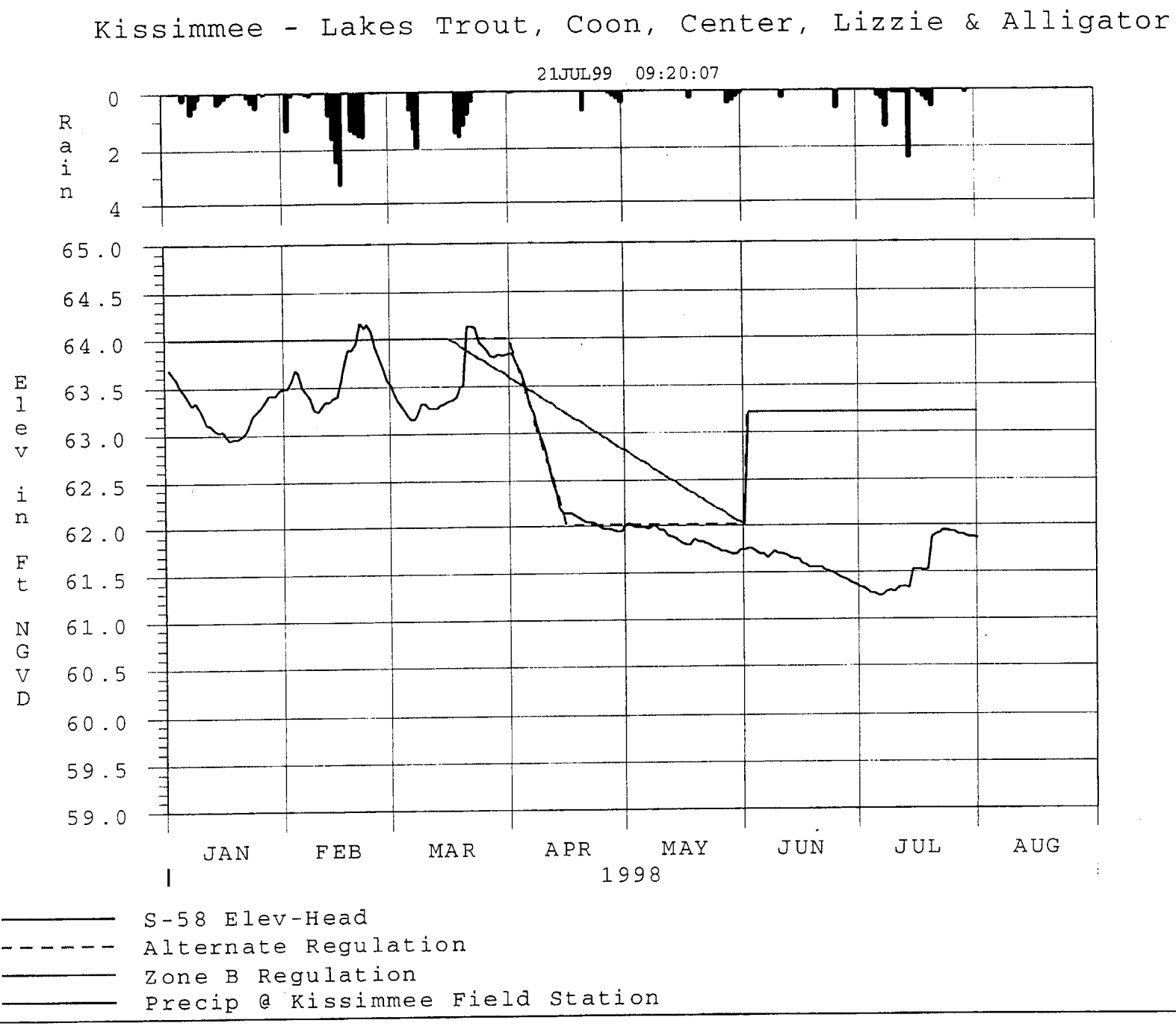

Kissimmee - Lakes Trout, Coon, Center, Lizzie & Alligator
21JUL99 09:20:07
Rain
0
2
4
Elev in Ft NGVD
65.0
64.5
64.0
63.5
63.0
62.5
62.0
61.5
61.0
60.5
60.0
59.5
59.0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
1998
S-58 Elev-Head
Alternate Regulation
Zone B Regulation
Precip @ Kissimmee Field Station

FIGURE 22

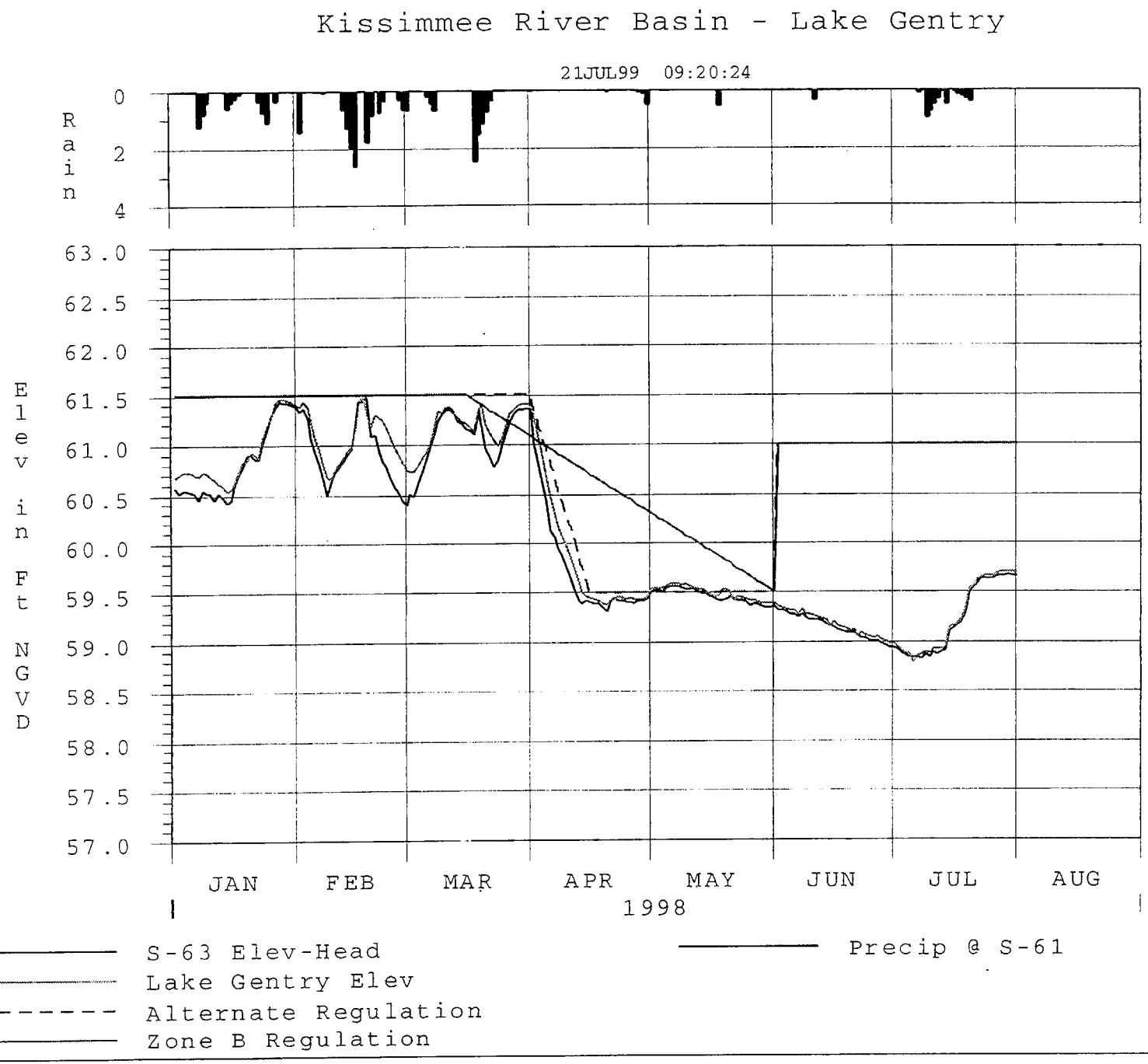

Kissimmee River Basin - Lake Gentry
21JUL99 09:20:24
Rain
0
2
4
Elev in Ft NGVD
63.0
62.5
62.0
61.5
61.0
60.5
60.0
59.5
59.0
58.5
58.0
57.5
57.0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
1998
S-63 Elev-Head
Lake Gentry Elev
Alternate Regulation
Zone B Regulation
Precip @ S-61

FIGURE 23

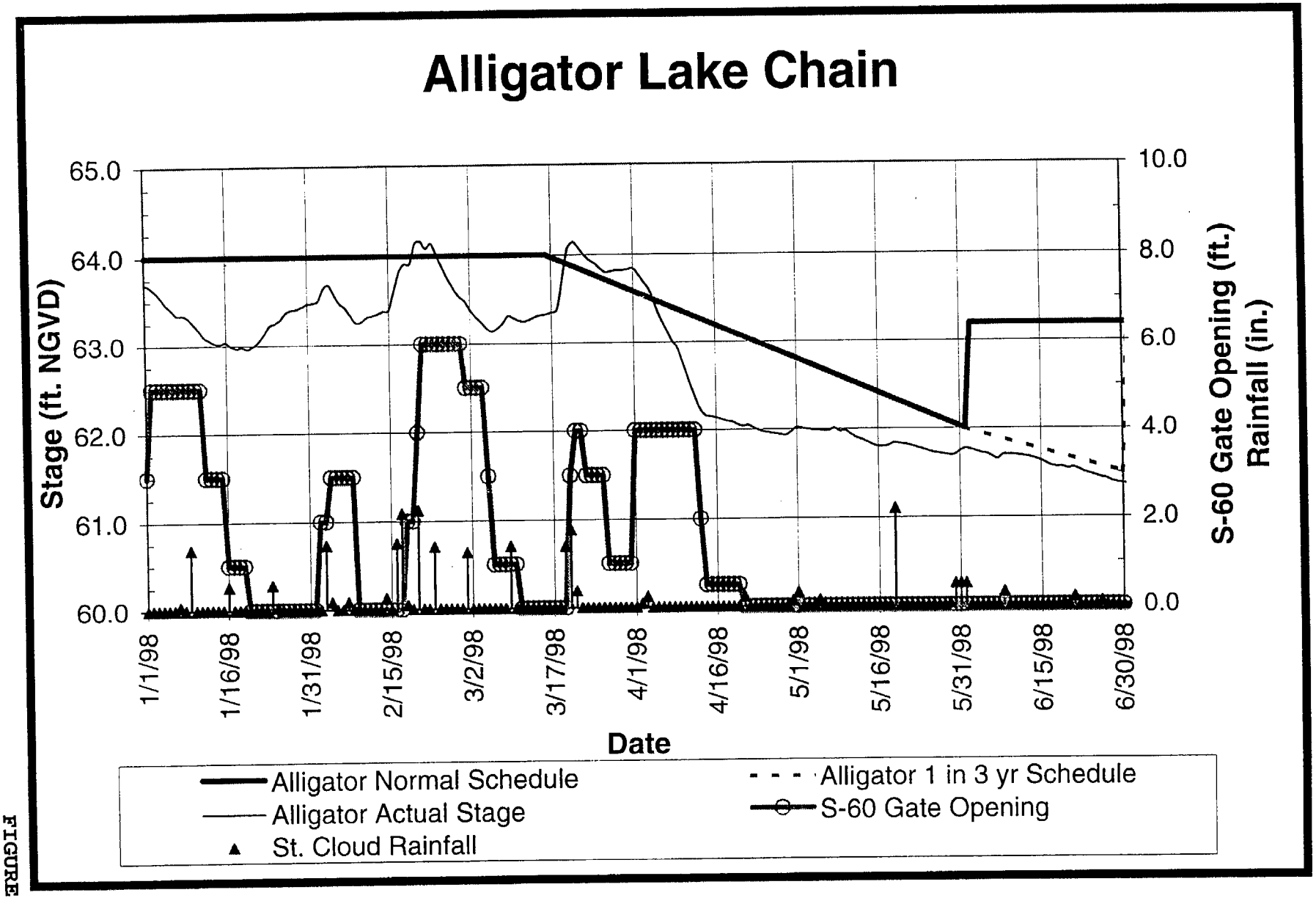

Alligator Lake Chain
Stage (ft. NGVD)
65.0
64.0
63.0
62.0
61.0
60.0
10.0
8.0
6.0
4.0
2.0
0.0
S-60 Gate Opening (ft.)
Rainfall (in.)
1/1/98
1/16/98
1/31/98
2/15/98
3/2/98
3/17/98
4/1/98
4/16/98
5/1/98
5/16/98
5/31/98
6/15/98
6/30/98
Date
Alligator Normal Schedule
Alligator Actual Stage
St. Cloud Rainfall
Alligator 1 in 3 yr Schedule
S-60 Gate Opening

FIGURE 24

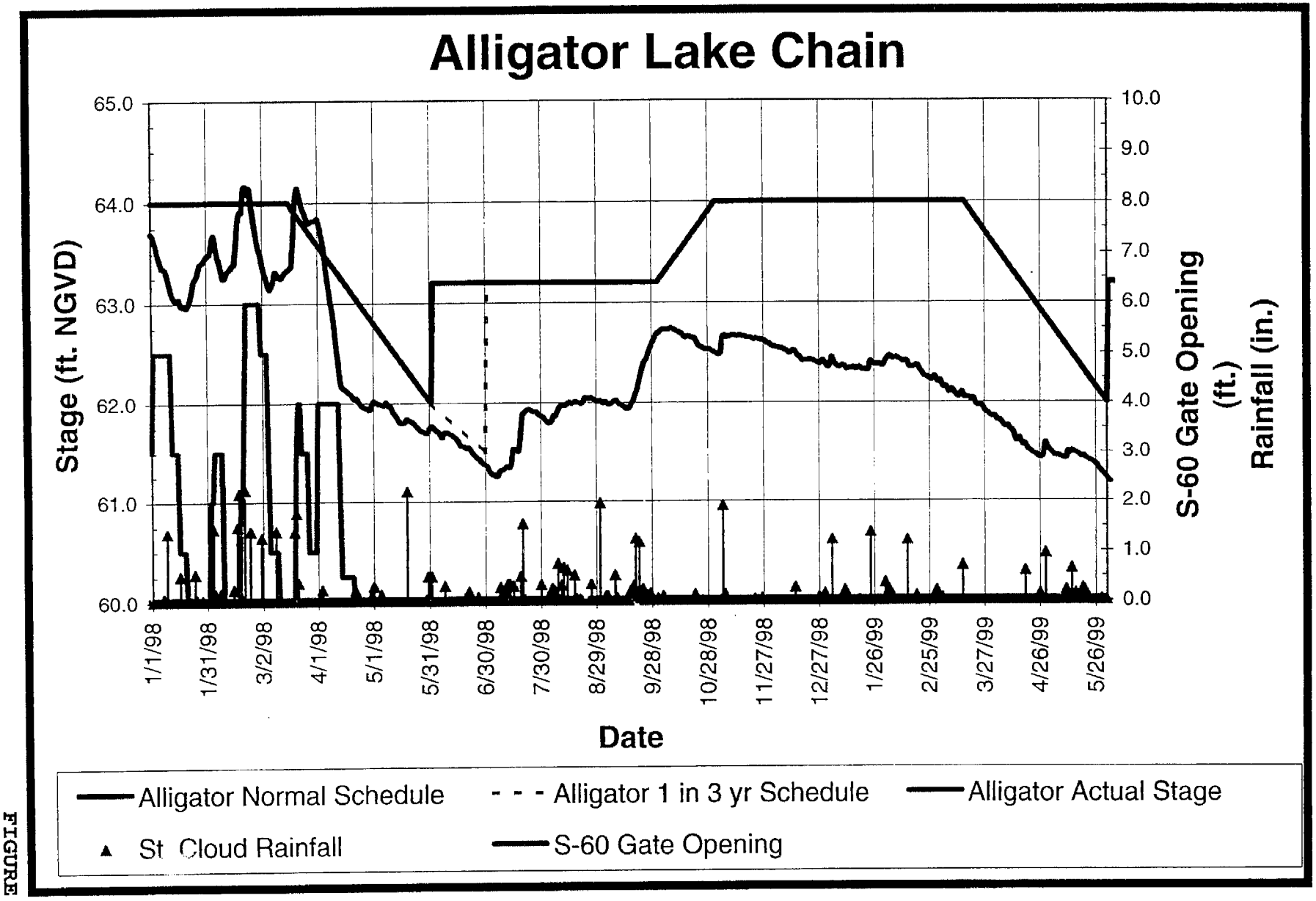

Alligator Lake Chain
Stage (ft. NGVD)
65.0
64.0
63.0
62.0
61.0
60.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
S-60 Gate Opening (ft.)
Rainfall (in.)
1/1/98
1/31/98
3/2/98
4/1/98
5/1/98
5/31/98
6/30/98
7/30/98
8/29/98
9/28/98
10/28/98
11/27/98
12/27/98
1/26/99
2/25/99
3/27/99
4/26/99
5/26/99
Date
Alligator Normal Schedule
Alligator 1 in 3 yr Schedule
Alligator Actual Stage
St Cloud Rainfall
S-60 Gate Opening

FIGURE 25

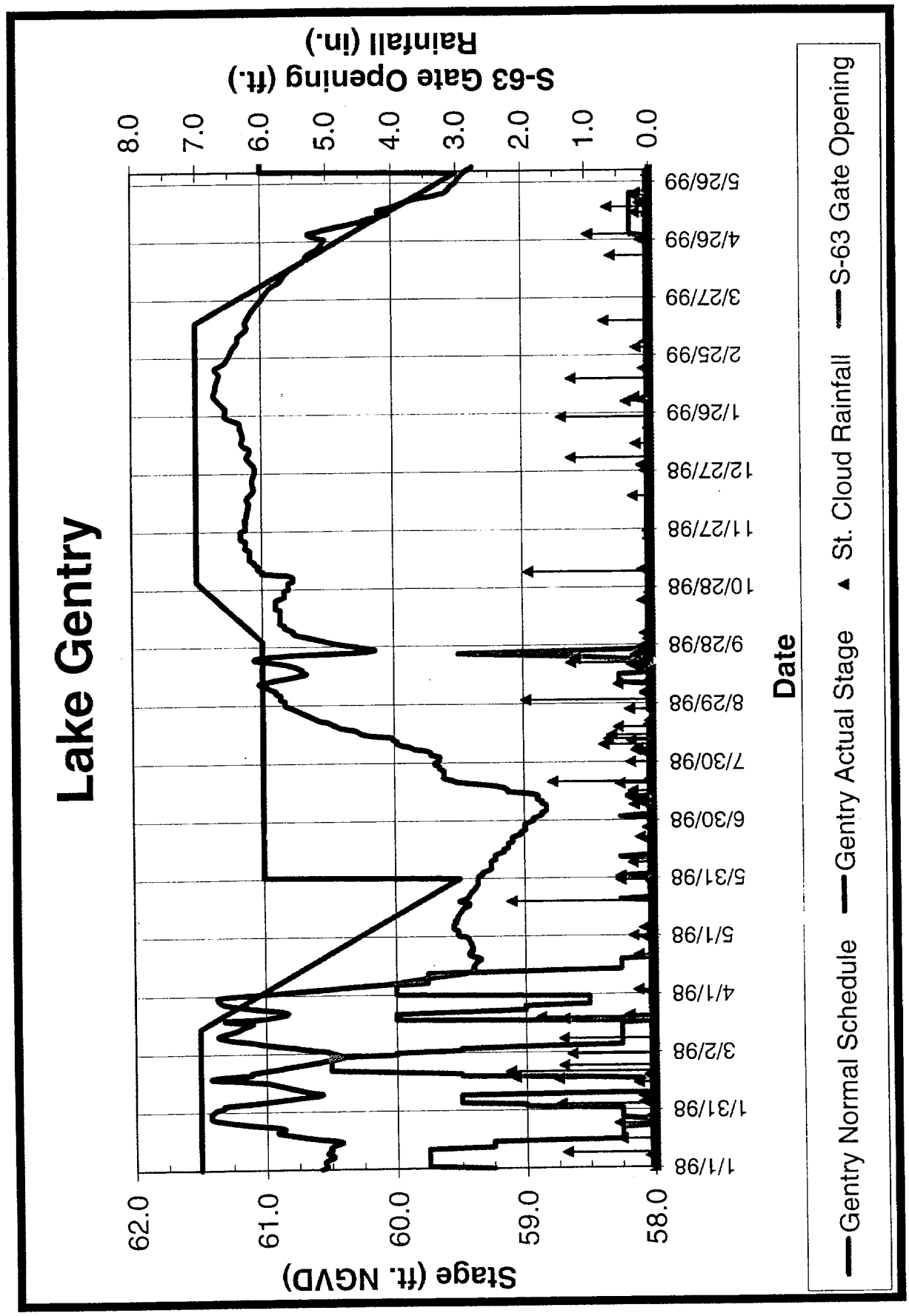

Lake Gentry
Stage (ft. NGVD)
62.0
61.0
60.0
59.0
58.0
S-63 Gate Opening (ft.)
Rainfall (in.)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/1/98
1/31/98
3/2/98
4/1/98
5/1/98
5/31/98
6/30/98
7/30/98
8/29/98
9/28/98
10/28/98
11/27/98
12/27/98
1/26/99
2/25/99
3/27/99
4/26/99
5/26/99
Date
Gentry Normal Schedule
Gentry Actual Stage
St. Cloud Rainfall
S-63 Gate Opening

FIGURE 26

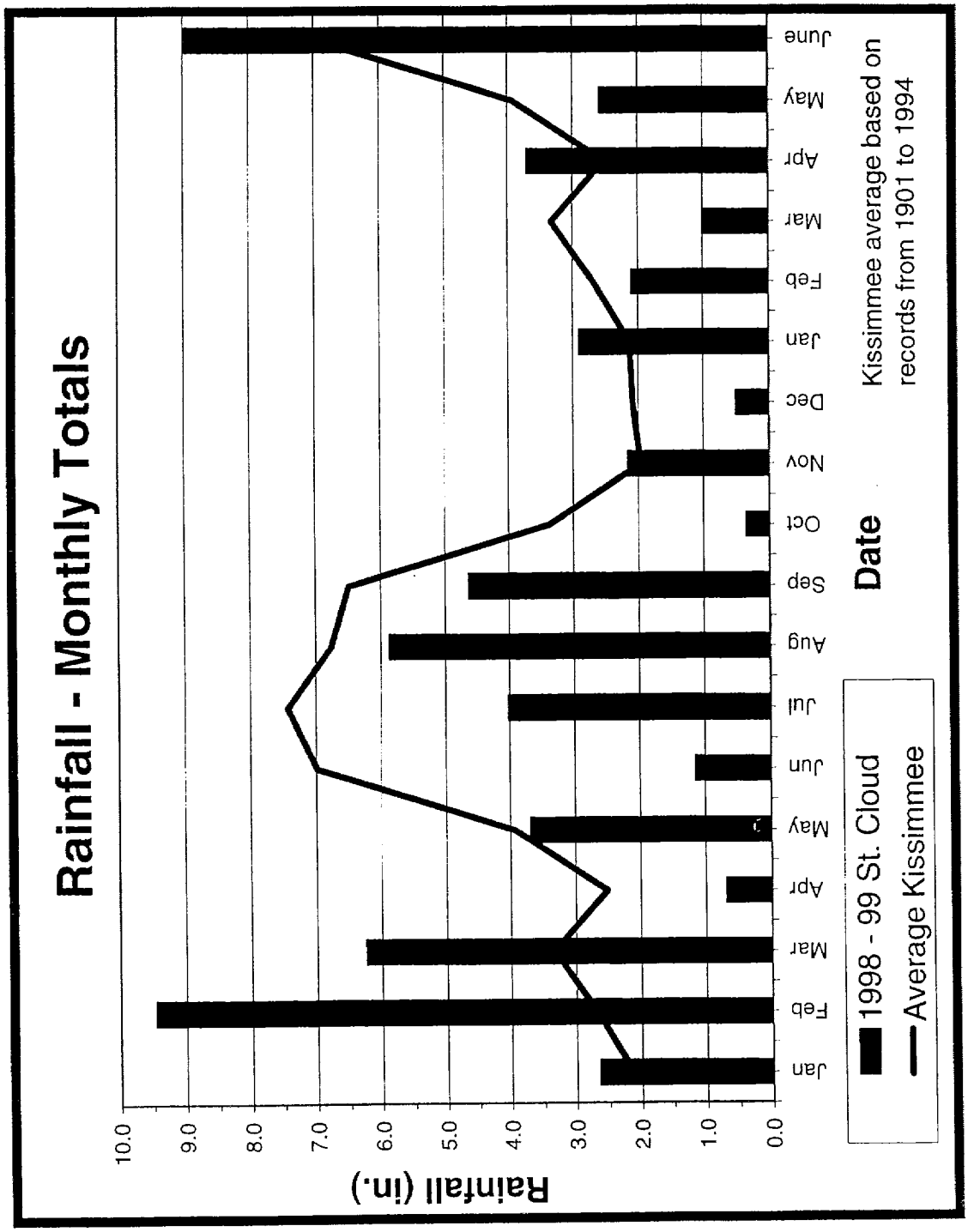

Rainfall - Monthly Totals
Rainfall (in.)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
June
Date
1998 - 99 St. Cloud
Average Kissimmee
Kissimmee average based on records from 1901 to 1994

FIGURE 27

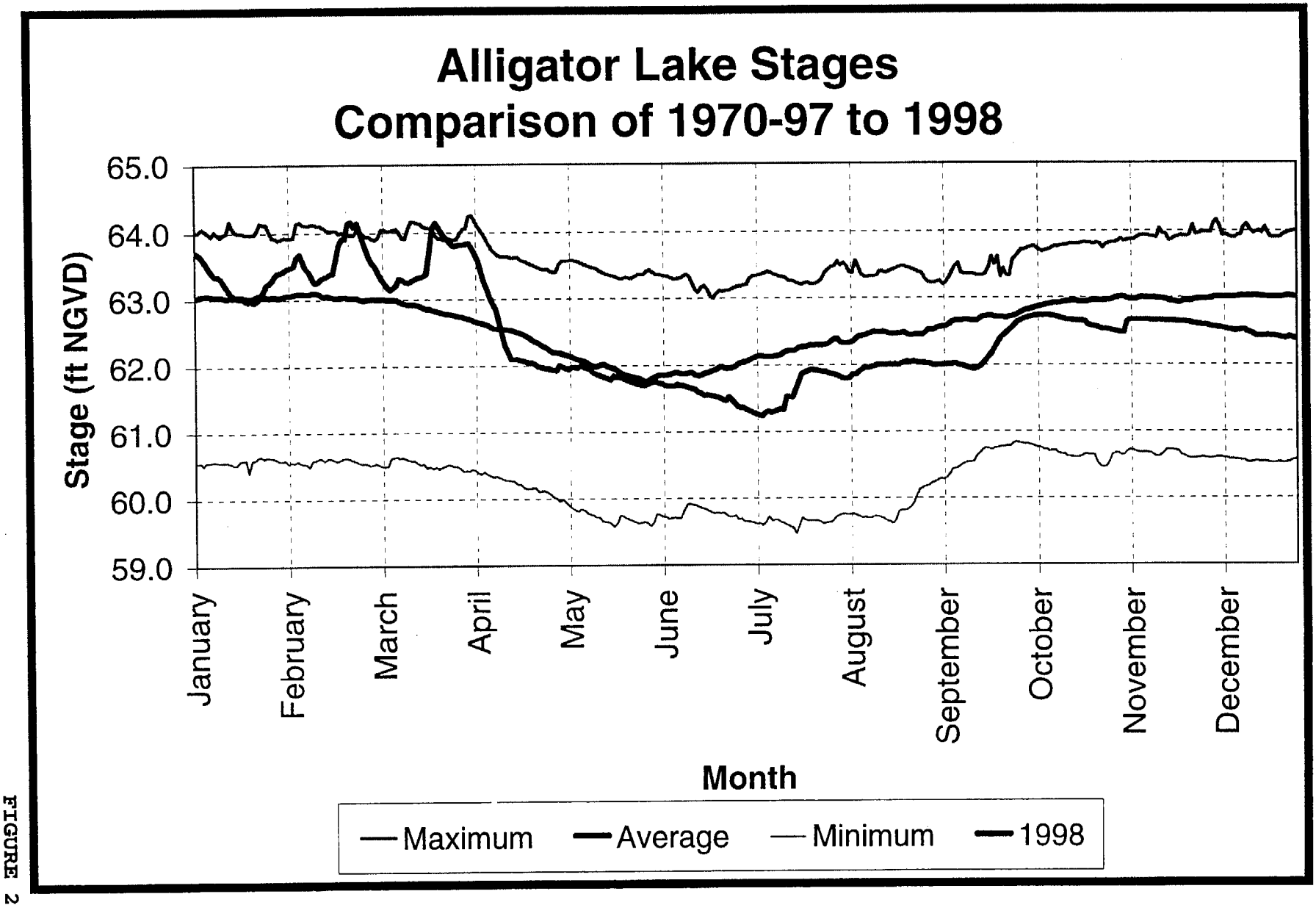
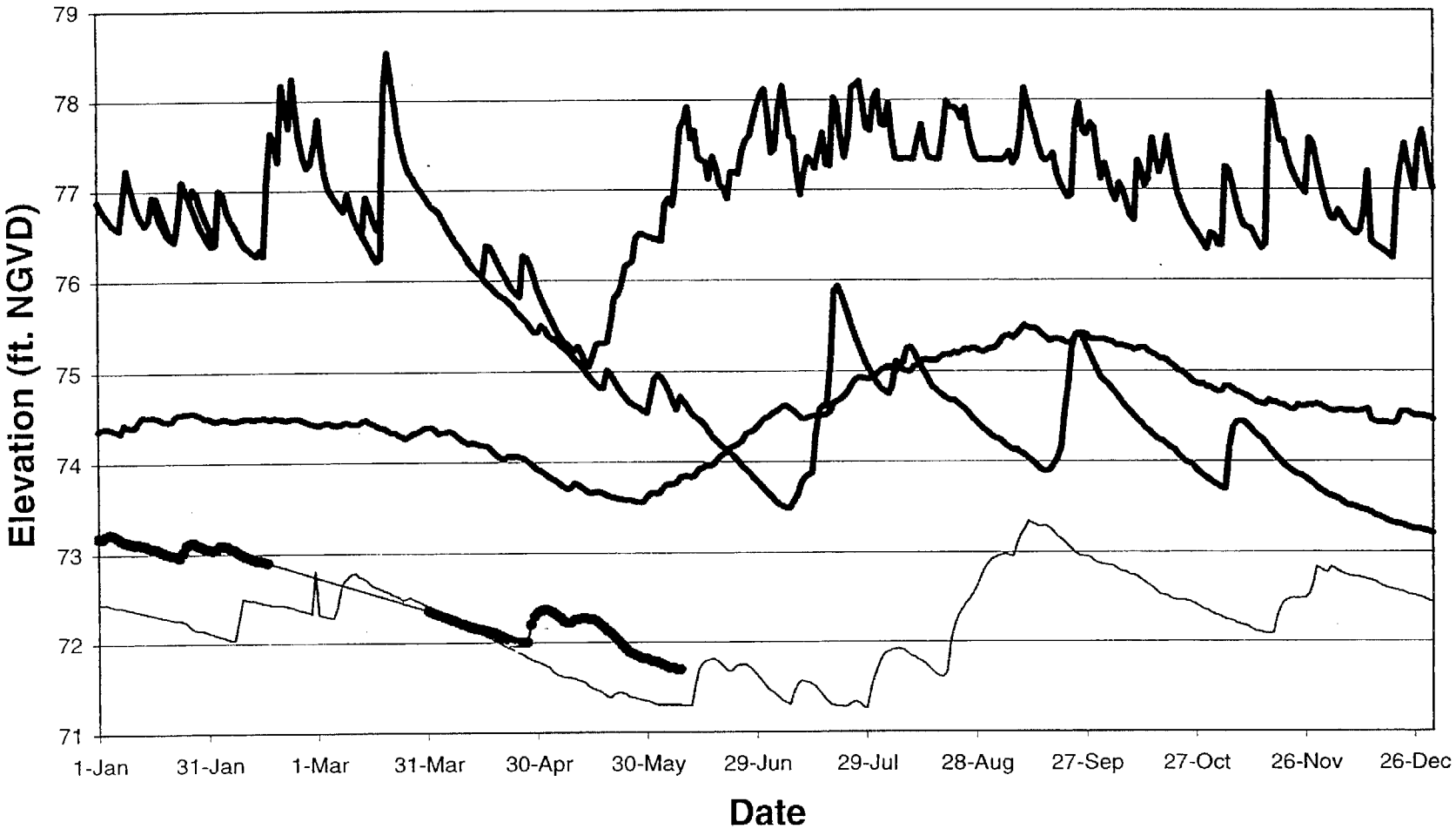

Alligator Lake Stages
Comparison of 1970-97 to 1998
Stage (ft NGVD)
65.0
64.0
63.0
62.0
61.0
60.0
59.0
January
February
March
April
May
June
July
August
September
October
November
December
Month
Maximum
Average
Minimum
1998

FIGURE 28

OS-181 Historical Levels



Maximum, Minimum, and Average based on 1970 - 1997 data

Maximum | Minimum | Average | 1998 | 1999

FIGURE 29

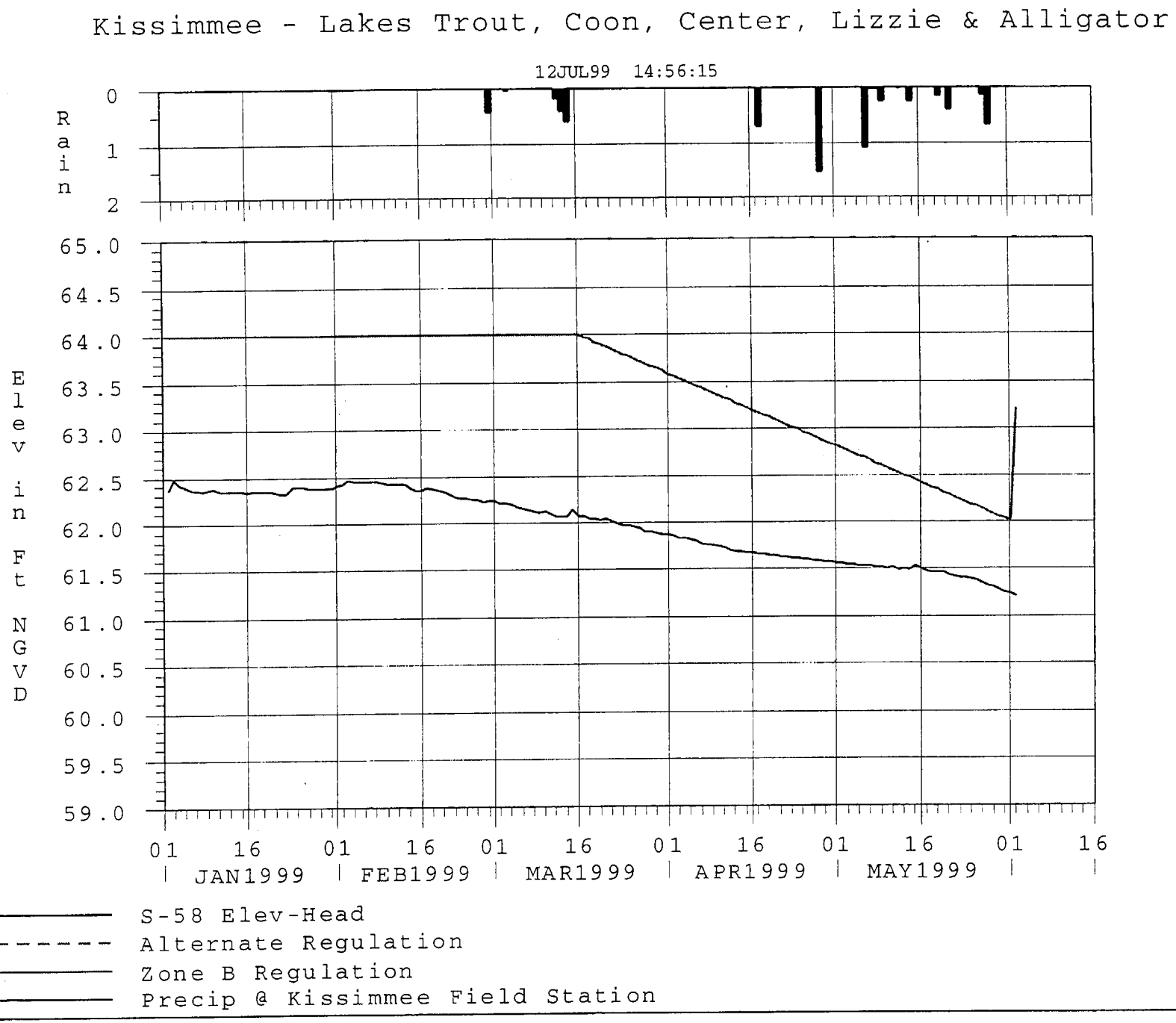

Kissimmee - Lakes Trout, Coon, Center, Lizzie & Alligator
12JUL99 14:56:15
Rain
0
1
2
Elev in Ft NGVD
65.0
64.5
64.0
63.5
63.0
62.5
62.0
61.5
61.0
60.5
60.0
59.5
59.0
01 16 01 16 01 16 01 16 01 16 01 16
JAN1999 FEB1999 MAR1999 APR1999 MAY1999
S-58 Elev-Head
Alternate Regulation
Zone B Regulation
Precip @ Kissimmee Field Station

FIGURE 30

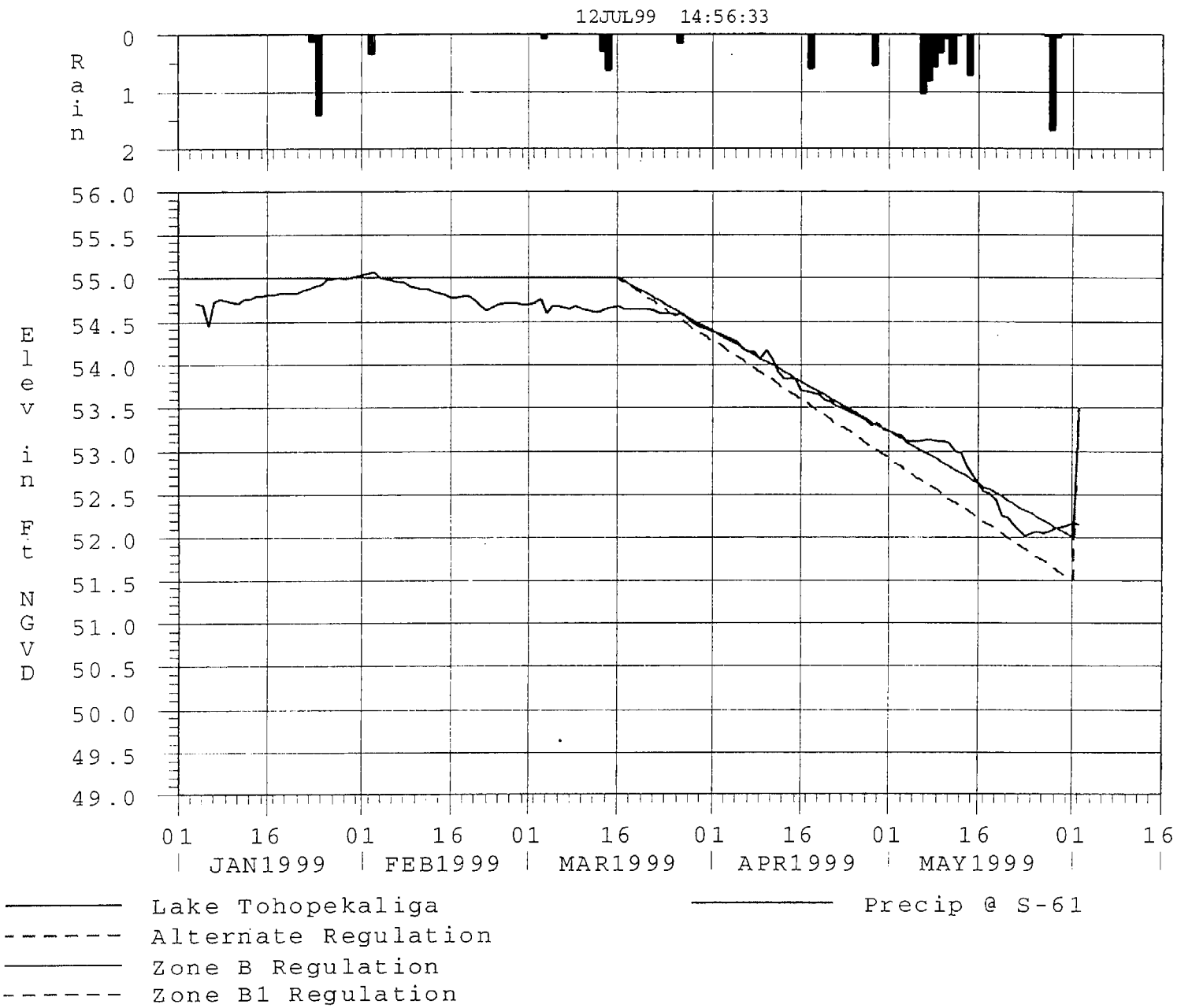
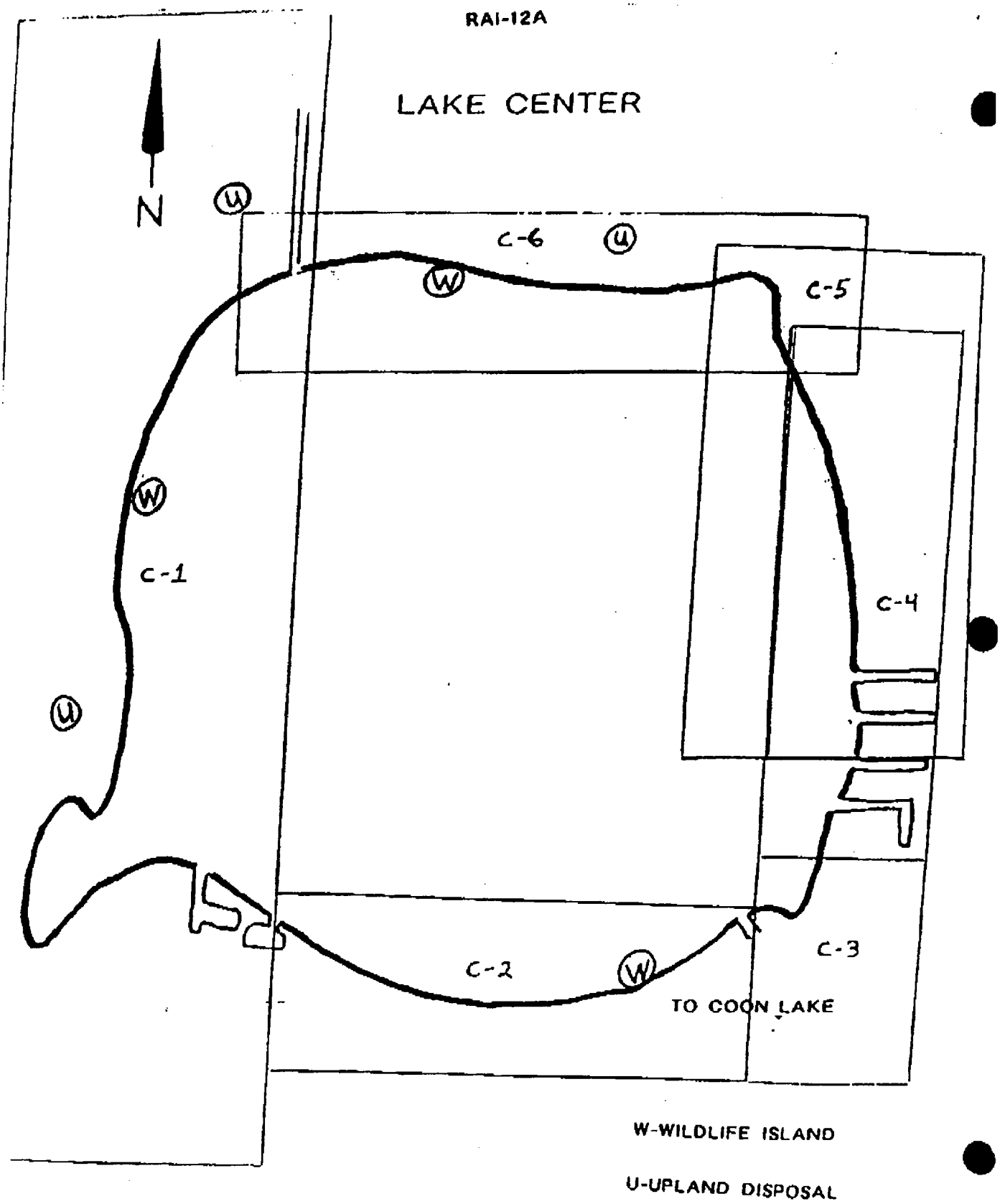

Kissimmee River Basin - Lake Tohopekaliga
12JUL99 14:56:33
Rain
0
1
2
Elev in Ft NGVD
56.0
55.5
55.0
54.5
54.0
53.5
53.0
52.5
52.0
51.5
51.0
50.5
50.0
49.5
49.0
01 16 01 16 01 16 01 16 01 16 01 16
JAN1999 FEB1999 MAR1999 APR1999 MAY1999
Lake Tohopekaliga
Alternate Regulation
Zone B Regulation
Zone B1 Regulation
Precip @ S-61

FIGURE 31



PERMIT 49128995

FIGURE 32

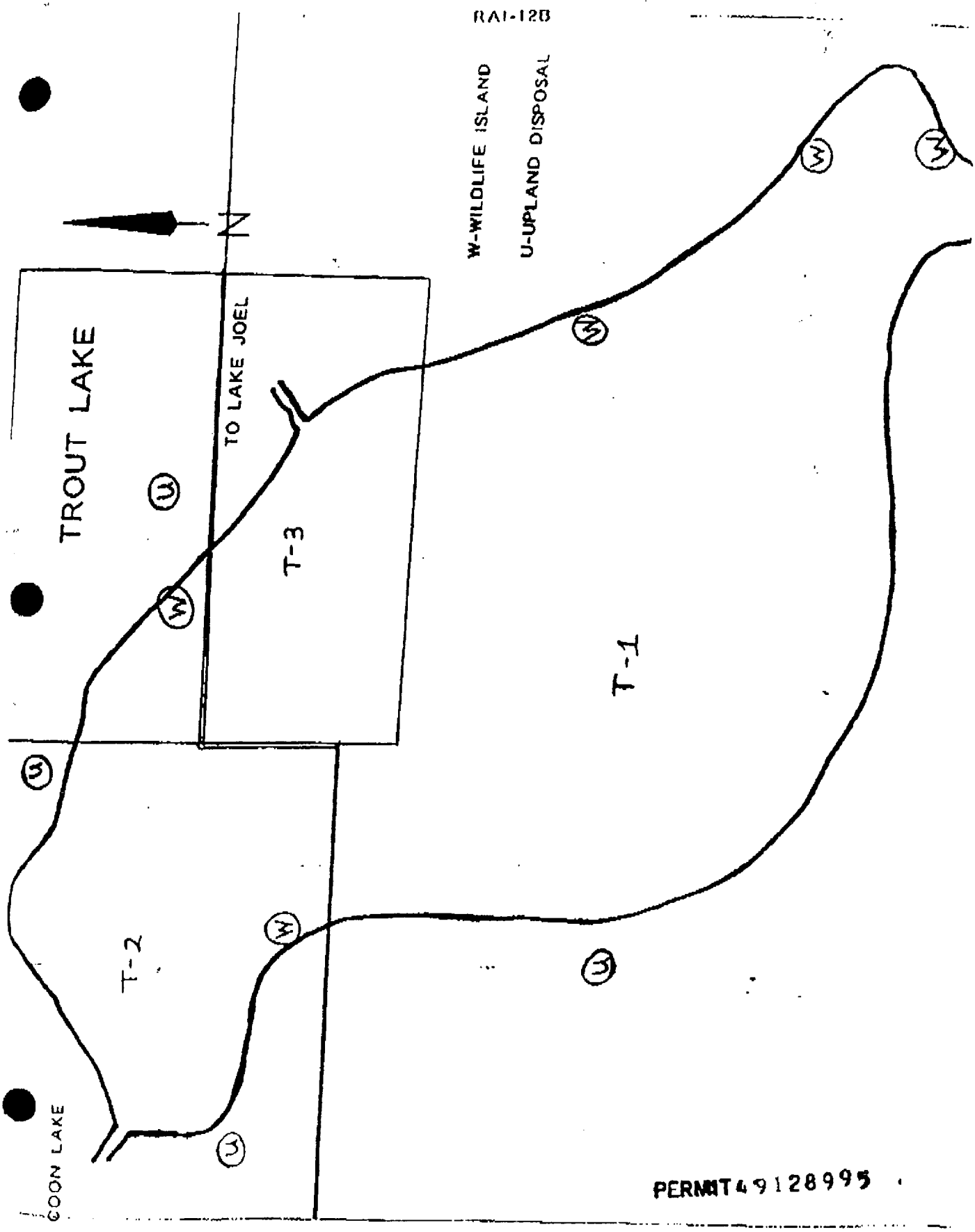
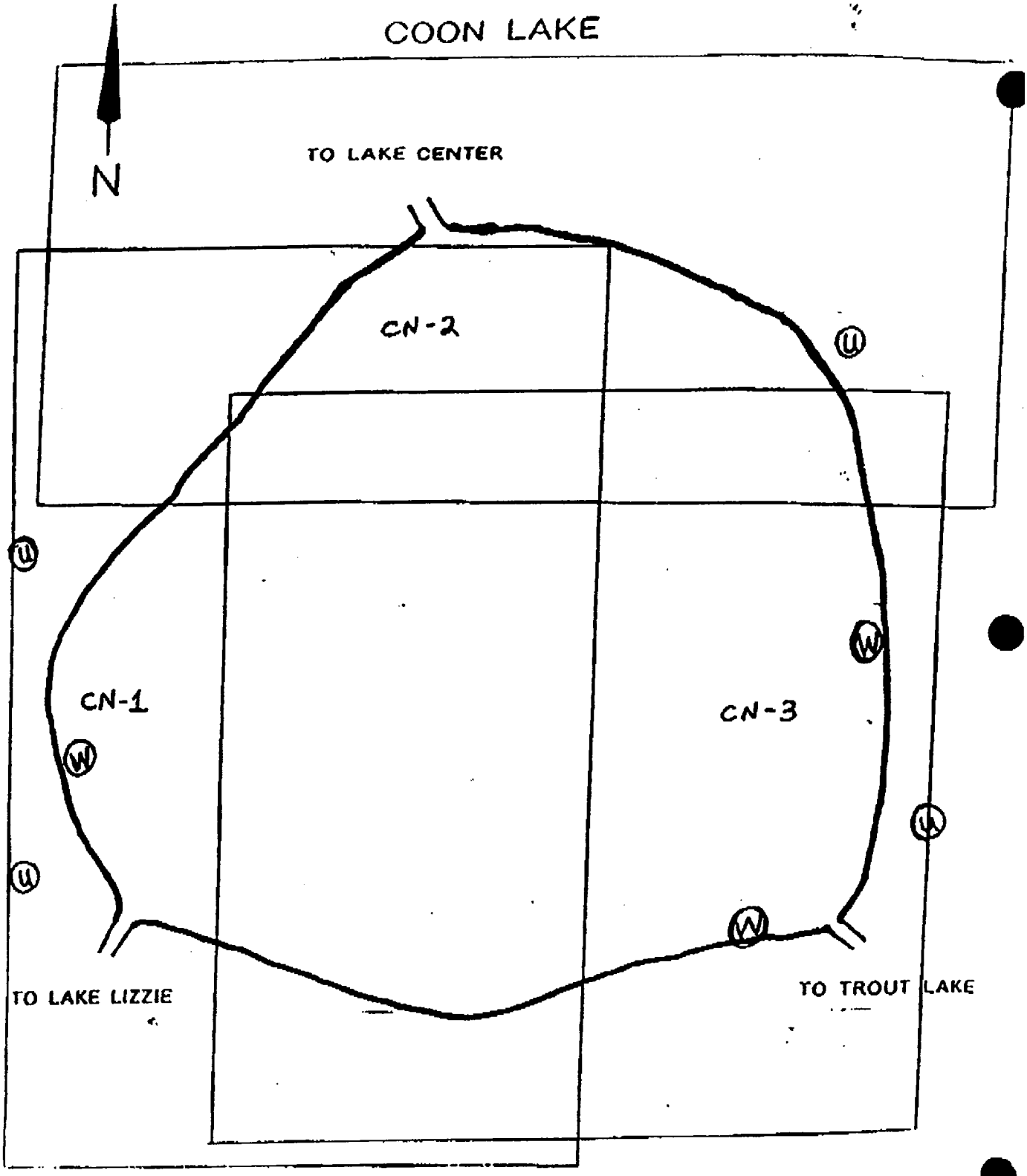

RAI-12B
W-WILDLIFE ISLAND
U-UPLAND DISPOSAL
N
TROUT LAKE
TO LAKE JOEL
T-3
T-1
T-2
GOON LAKE
PERMIT 49128995

FIGURE 33

RAI-12C

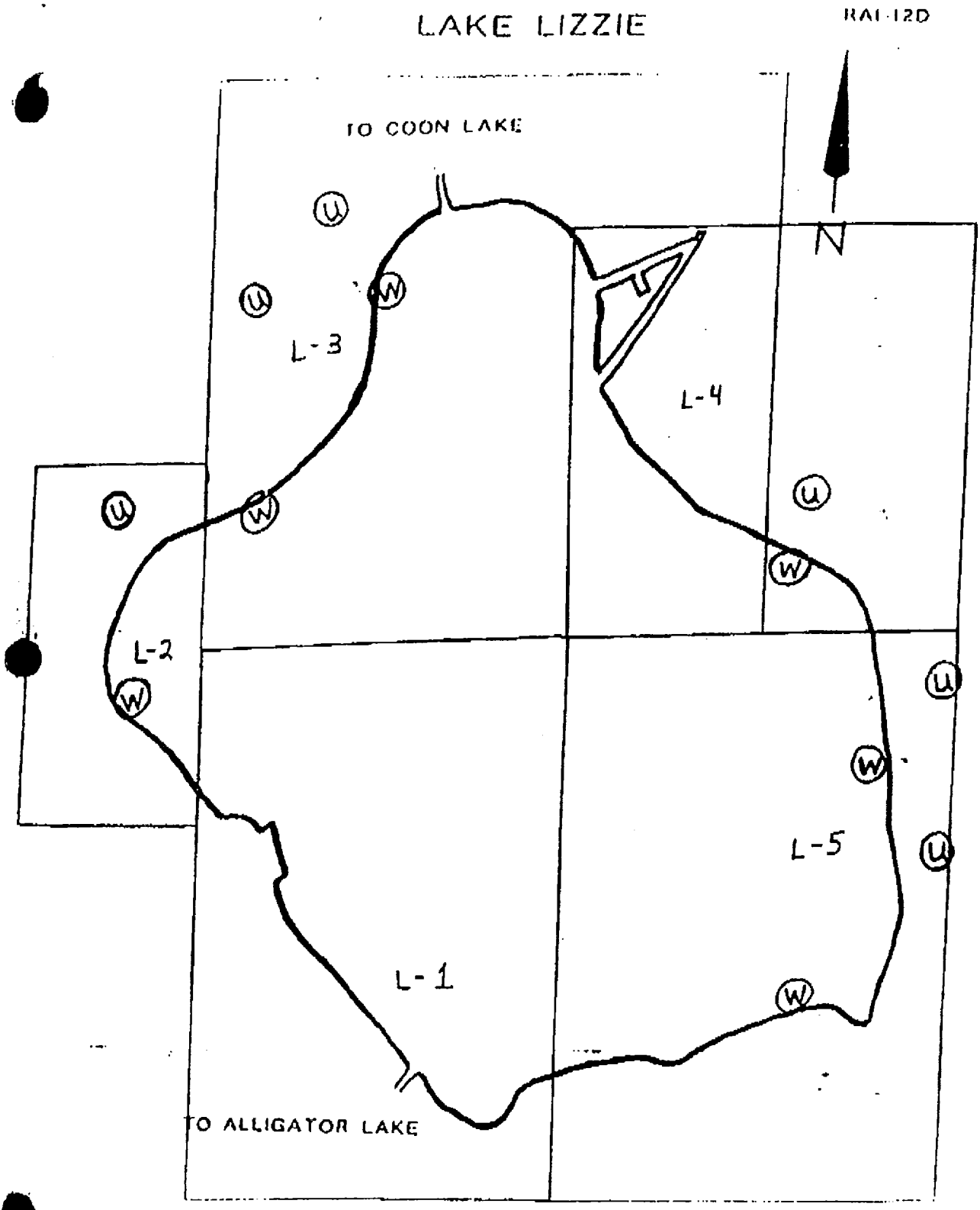


W-WILDLIFE ISLAND

U-UPLAND DISPOSAL

PERMIT # 912898 RECEIVED JUL 16 1997

FIGURE 34



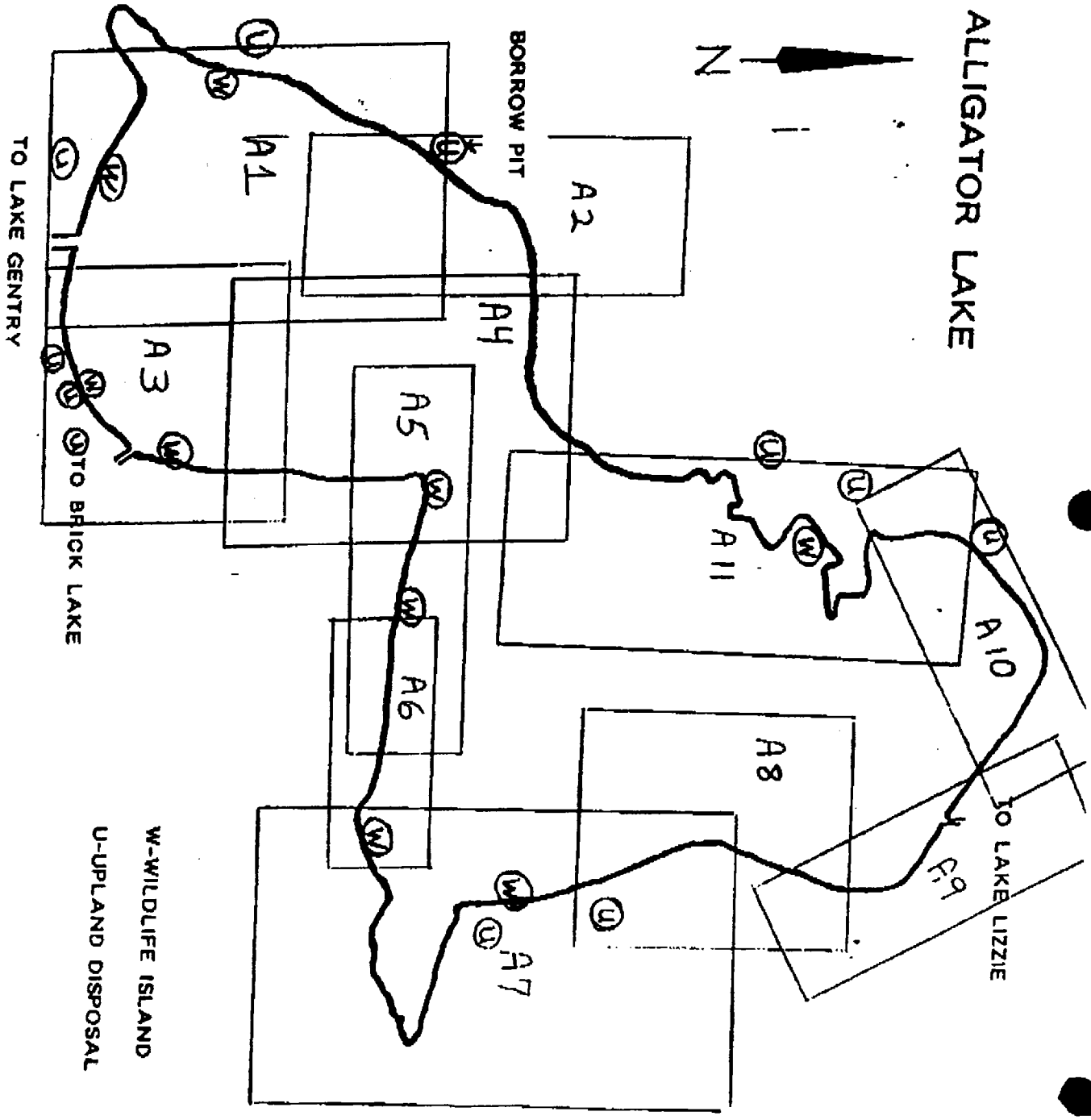
W-WILDLIFE ISLAND

U-UPLAND DISPOSAL

PERMIT/ 0129995

FIGURE 35

RAI-12E



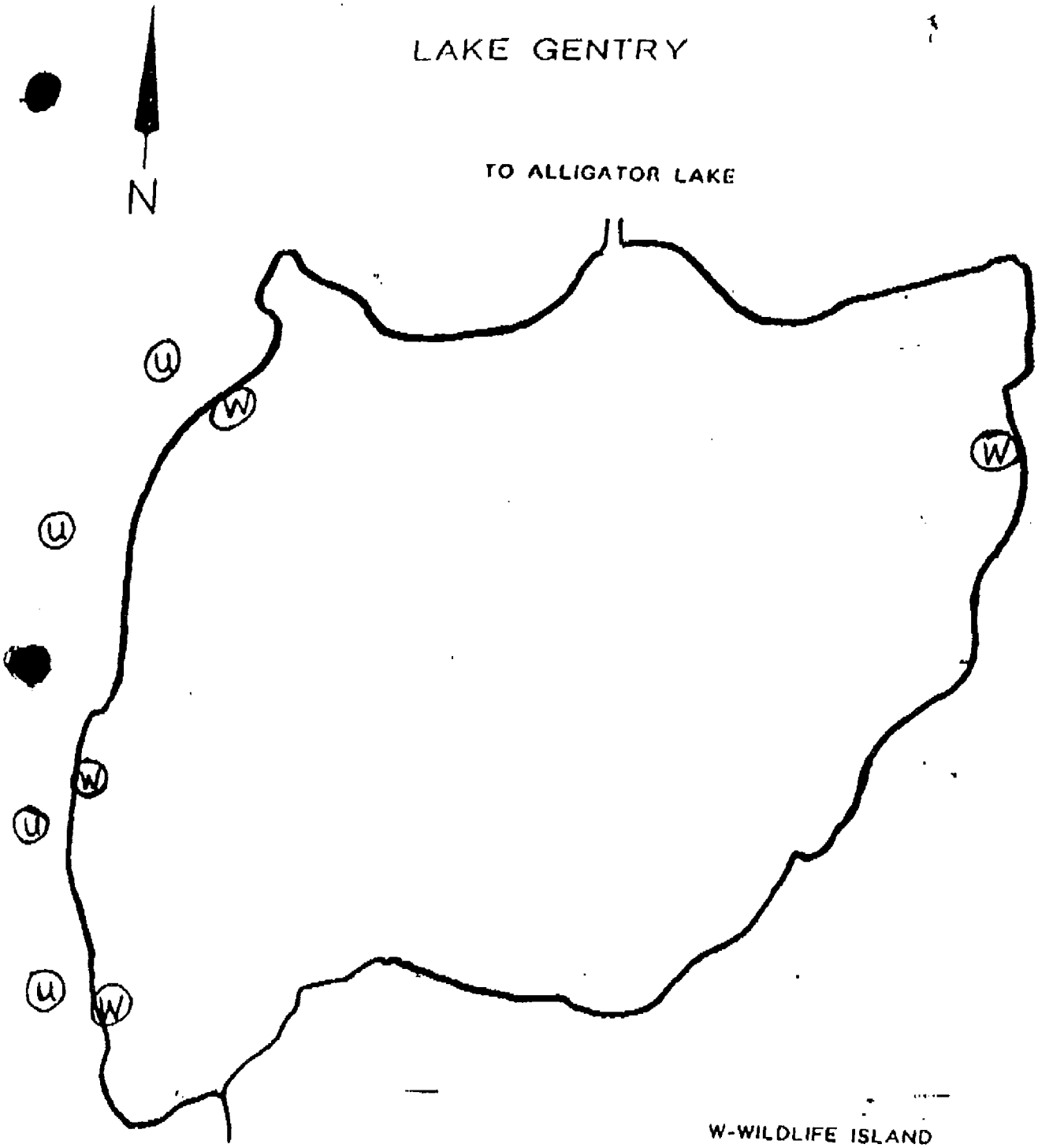
PERMIT 49128995

RECEIVED JUL 16 1997

FIGURE 36

RAI-12F

LAKE GENTRY



W-WILDLIFE ISLAND

U-UPLAND DISPOSAL

PERMIT 49128995

FIGURE 37

APPENDIX I

DESCRIPTION OF EXTREME DRAWDOWN AND HABITAT ENHANCEMENT PROJECT
ALLIGATOR LAKE CHAIN AND LAKE GENTRY
OSCEOLA COUNTY, FLORIDA

APPENDIX - I

Description of Extreme Drawdown and Habitat Enhancement Project Alligator Lake Chain and Lake Gentry, Osceola County, Florida

Based on comments received in response to coordination of the Draft EIS with agencies and the public, it was identified that adopting the Lake Gentry Postponement Alternative as the preferred alternative would reduce the potential impacts of the extreme drawdown on the adjacent surficial aquifer at the Moonlight fish farm, which is located between Lakes Gentry and Alligator, about a mile from each lake. The Lake Gentry Postponement Alternative would postpone the start of Lake Gentry's extreme drawdown until the second calendar year of the Alligator Chain's extreme drawdown, or later. The plan to implement the proposed project includes the elements in items 1 through 6.

1. Regulation Schedule Changes. The proposed action requiring National Environmental Policy Act (NEPA) documentation is the modification of the regulation schedules for the Alligator Lake Chain; Lake Gentry; and Lakes Joel, Myrtle, and Preston, for the purpose of facilitating an extreme drawdown and habitat enhancement project on the Alligator Lake Chain and Lake Gentry. The Alligator Lake Chain consists of Lakes Alligator, Brick, Lizzie, Coon, Center, and Trout. The extreme drawdowns of the Alligator Lake Chain and Lake Gentry are necessary in order to perform habitat enhancement to include muck removal and burning of dense vegetation. The drawdowns would be coordinated with the South Florida Water Management District (SFWMD). Habitat enhancement activities are recommended by the Florida Game and Freshwater Fish Commission (GFC) which has applied for and received a Department of the Army permit for these activities. Habitat enhancement activities are to be performed by the GFC or others working in accordance with its permit. Regulation schedules for two calendar years would be modified to facilitate the extreme drawdown and habitat enhancement project on the Alligator Chain (as of mid-August 1999 the drawdown is scheduled for 1999 and 2000). The proposed regulation schedule changes would begin in October of the first calendar year of the Alligator Chain's extreme drawdown. Regulation schedules for two calendar years would be modified to facilitate the extreme drawdown and habitat enhancement project on Lake Gentry (the first of these two calendar years could be as early as the second calendar year of the regulation schedule changes for the Alligator Chain's extreme drawdown). A regulation schedule essentially represents the seasonal and monthly limits of storage which guide the regulation of water levels for the purposes of flood control, navigation, agricultural water supply, and environmental enhancement. Lake levels can vary above and below the regulation schedule due to hydrometeorologic conditions. The regulation schedules proposed for the extreme drawdowns of the

Alligator Chain and Lake Gentry are shown in Figures 1 through 6, including Figure 2a.

For the Alligator Chain extreme drawdown portion of the Lake Gentry Postponement Alternative, the regulation schedules in Figures 1 through 6 would be used in the two calendar years in which the Alligator Chain's extreme drawdown is conducted. However, during the Alligator Chain's extreme drawdown, the Lake Gentry regulation schedules in Figures 3 and 4 would not be used to lower Lake Gentry to the extreme drawdown level of 56.5 ft NGVD; rather, these schedules would be used to lower Lake Gentry to and maintain it at approximately 59.0 ft NGVD as needed to facilitate water movement out of the Alligator Chain.

The extreme drawdown of Lake Gentry would begin possibly as early as the second calendar year of the Alligator Chain's extreme drawdown, and would continue into the following year. The Lake Gentry regulation schedules in Figures 3 and 4 would be used to lower Lake Gentry to and maintain it at, approximately, the extreme drawdown level of 56.5 ft NGVD. The Alligator Chain regulation schedules in Figures 1 and 2 and the Lakes Joel, Myrtle, and Preston regulation schedules in Figures 5 and 6 would not be used during the extreme drawdown of Lake Gentry.

During preparation of the Final EIS, a refinement has been made to the Lake Gentry Postponement Alternative to further reduce the potential impact of the extreme drawdown project on the adjacent surficial aquifer at the Moonlight fish farm. This refinement would be a modification of the Alligator Chain's regulation schedule to aid in refilling Lake Gentry after Lake Gentry's extreme drawdown. During the second calendar year of Lake Gentry's extreme drawdown, the Alligator Chain's regulation schedule would be maintained at the high pool elevation of 64.0 ft NGVD from mid-March through the end of March and then would decline to 63.2 ft NGVD by the end of May. In June, water from the Alligator Chain would be used to help refill Lake Gentry provided that the water level in the Alligator Chain is above approximately 62.0 ft NGVD. The Alligator Chain would not be lowered below approximately 62.0 ft NGVD in order to help refill Lake Gentry. The modified Alligator Chain regulation schedule is shown in Figure 2a.

If the proposed regulation schedules for the extreme drawdowns are not approved prior to the start date of the proposed regulation schedule modifications, water control operations will be performed according to approved regulation schedules until the drawdown schedules are approved. At that time, operations according to the drawdown schedules would be initiated. It is also proposed that, at the discretion of the USACE, the drawdown regulation schedules may be implemented at a later date if it appears that a successful drawdown and habitat enhancement project cannot be conducted in the time period for which it is planned.

a. Regulation Schedule Changes for the Alligator Lake Chain. The proposed regulation schedule changes for the Alligator Lake Chain would begin October 1 of the first calendar year, at which time the regulation schedule would remain at the summer pool elevation of 63.2 ft (all elevations herein refer to the National Geodetic Vertical Datum of 1929 or NGVD) through the month and until November 14. Beginning November 14, the regulation schedule would decline from 63.2 ft to 62.5 ft by November 25 and to 60.0 ft by February 1 of the second calendar year. The actual water level should reach 60.0 ft by March 1 of the second calendar year of the Alligator Chain's extreme drawdown. In Figures 1 and 2, Zone B1, which lies above the drawdown schedule but below the normal regulation schedule for the Alligator Lake Chain, is a zone of operational flexibility. In Zone B1, water control structures would be operated to facilitate implementation of the proposed extreme drawdown and habitat enhancement project. This may include temporarily stopping discharges or pumping to facilitate construction or dredging.

The Alligator Chain extreme drawdown regulation schedule would remain at 60.0 ft NGVD until June 1 of the second calendar year. On that date, the schedule would rise vertically to the summer pool elevation of 63.2 ft NGVD, and the Alligator Chain would be allowed to refill. Because the lakes of Alligator Chain are at the top of its watershed and there is no feasible way to store enough water in nearby lakes to refill them, the rate of Alligator Chain refilling will be largely dependent on rainfall. However, the proposed modifications to the regulation schedules for Lakes Joel, Myrtle, and Preston will allow for some storage which would assist in the refill of the Alligator Chain. With normal rainfall, the Alligator Lake Chain should return to normal low pool stages by Fall of the second calendar year. In a single- or multi-year drought condition, the Alligator Chain lake elevations would probably not return to their normal regulation ranges until the drought ends and a normal rainy season is experienced.

b. Regulation Schedule Changes for Lake Gentry. The regulation schedule changes for Lake Gentry's extreme drawdown would begin on October 1 of the first calendar year of Lake Gentry's extreme drawdown, at which time the schedule for Lake Gentry would remain at the summer pool elevation of 61.0 ft through the month and until November 10. Beginning November 10, the schedule for Lake Gentry would decline from 61.0 ft to 56.5 ft by February 1 of the second calendar year. Under normal rainfall conditions, the actual water level should reach 56.5 ft by March 1. As with the Alligator Chain drawdown regulation schedules, the Lake Gentry drawdown regulation schedule also has a zone of operational flexibility called Zone B1 which lies above the drawdown schedule but below the normal regulation schedule for Lake Gentry. In Zone B1, water control structures would be operated to facilitate implementation of the proposed extreme drawdown and habitat enhancement project. This may include