GROUND-WATER CONDITIONS IN GEORGIA, 1994

By Alan M. Cressler, L. Elliott Jones, and Charles N. Joiner

U.S. GEOLOGICAL SURVEY

Open-File Report 95-302

Prepared in cooperation with the

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
GEORGIA GEOLOGIC SURVEY

ALBANY WATER, GAS, AND LIGHT COMMISSION

CITY OF BRUNSWICK

GLYNN COUNTY

CITY OF VALDOSTA

Atlanta, Georgia

1995

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CONTENTS

Abstract **1**
Introduction **2**
- Purpose and scope **2**
- Well-numbering system **2**

Precipitation **3**
Ground-water resources **15**
Ground-water levels **18**
- Surficial aquifers **21**
  - Northern area **21**
  - Southwestern area **21**
  - Coastal area **26**
- Upper Brunswick aquifer **32**
- Floridan aquifer system **37**
  - Upper Floridan aquifer **37**
    - Southwestern area **39**
    - South-central area **48**
    - East-central area **53**
    - Coastal area **57**
      - Savannah subarea **59**
      - Jesup-Doctortown subarea **67**
      - Brunswick subarea **71**
      - St Marys-Okefenokee Swamp subarea **76**
  - Lower Floridan aquifer in the Brunswick area **79**
- Claiborne aquifer **83**
- Clayton aquifer **93**
- Cretaceous aquifers and aquifer systems **102**
  - Providence aquifer **105**
  - Dublin aquifer system **107**
  - Midville aquifer system **109**
  - Dublin-Midville aquifer system **112**
- Paleozoic rock aquifers **115**
- Crystalline-rock aquifers **118**

Chloride concentration in water from the Floridan aquifer system **125**
- Savannah area **126**
- Brunswick area **129**

Selected references **133**

ILLUSTRATIONS

Figure 1. Map showing locations of precipitation monitoring stations **4**

Figures 2-11. Graphs showing departure from normal precipitation (1961-90):
A.—monthly and cumulative, 1994
B.—cumulative, 1985 through 1994
National Weather Service station:
2. Athens airport, Clarke County, Georgia **5**
3. Atlanta airport, Fulton County, Georgia **6**
4. Chattanooga airport, Hamilton County, Tennessee **7**
5. Albany 3 SE, Dougherty County, Georgia **8**
6. Augusta airport, Richmond County, Georgia **9**
7. Waycross WSMO, Ware County, Georgia **10**
8. Cleveland, White County, Georgia **11**
9. Columbus airport, Muscogee County, Georgia **12**
10. Macon airport, Bibb County, Georgia **13**
11. Savannah airport, Chatham County, Georgia **14**

Figures 12-14. Maps showing:
12. Major aquifers and physiographic provinces of Georgia **17**
13. Locations of observation wells for which hydrographs are included in this report **20**
14. Locations of observation wells completed in the surficial aquifers **22**

Figures 15-22. Hydrographs showing the water level in observation well:
15. 11AA01, Spalding County **23**
16. 13M007, Worth County **24**
17. 07H003, Miller County **25**
18. 35P094, Chatham County **27**
19. 37P116, Chatham County **28**
20. 32R003, Bulloch County **29**
21. 34H438, Glynn County **30**
22. 32L017, Wayne County **31**

Figure 23. Map showing locations of observation wells completed in the upper Brunswick aquifer **33**

Figures 24-26. Hydrographs showing the water level in observation well:
24. 31U009, Bulloch County **34**
25. 32L016, Wayne County **35**
26. 34H437, Glynn County **36**

Figure 27. Map showing subareas and locations of observation wells completed in the Upper Floridan aquifer **38**

Figures 28-42. Hydrographs showing the water level in observation well:
28. 09F520, Decatur County **40**
29. 08G001, Miller County **41**
30. 06F001, Seminole County **42**
31. 13L012, Dougherty County **43**
32. 10G313, Mitchell County **44**
33. 13L003, Dougherty County **45**
34. 13J004, Mitchell County **46**
35. 15L020, Worth County **47**
36. 18K049, Tift County **49**
37. 18H016, Cook County **50**

ILLUSTRATIONS—Continued

Figures 28-42. Hydrographs showing the water level in observation well:—Continued
38. 19E009, Lowndes County **51**
39. 19F039, Lowndes County **52**
40. 21T001, Laurens County **54**
41. 25Q001, Montgomery County **55**
42. 26R001, Toombs County **56**

Figure 43. Map showing subareas and locations of observation wells completed in the Upper Floridan aquifer in the coastal area **58**

Figures 44-59. Hydrographs showing the water level in observation well:
44. 36Q008, Chatham County **60**
45. 36Q020, Chatham County **61**
46. 38Q002, Chatham County **62**
47. 39Q003, Chatham County **63**
48. 32R002, Bulloch County **64**
49. 34N089, Liberty County **65**
50. 35M013, McIntosh County **66**
51. 30L003, Wayne County **68**
52. 32L015, Wayne County **69**
53. 33M004, Long County **70**
54. 33H127, Glynn County **72**
55. 34H403, Glynn County **73**
56. 33H133, Glynn County **74**
57. 34H371, Glynn County **75**
58. 33E027, Camden County **77**
59. 27E004, Charlton County **78**

Figure 60. Map showing locations of observation wells completed in the Lower Floridan aquifer **80**

Figures 61-62. Hydrographs showing the water level in observation well:
61. 34H391, Glynn County **81**
62. 33J044, Glynn County **82**

Figure 63. Map showing locations of observation wells completed in the Claiborne aquifer **84**

Figures 64-71. Hydrographs showing the water level in observation well:
64. 06K010, Early County **85**
65. 09M009, Randolph County **86**
66. 11K002, Dougherty County **87**
67. 11L001, Dougherty County **88**
68. 12L019, Dougherty County **89**
69. 13L011, Dougherty County **90**
70. 13M005, Worth County **91**
71. 14P015, Crisp County **92**

Figure 72. Map showing locations of observation wells completed in the Clayton aquifer **94**

Figures 73-79. Hydrographs showing the water level in observation well:
73. 06K009, Early County **95**
74. 07N001, Randolph County **96**
75. 09N001, Terrell County **97**
76. 11L002, Dougherty County **98**
77. 13L002, Dougherty County **99**

ILLUSTRATIONS—Continued

Figures 73-79. Hydrographs showing the water level in observation well:—Continued
78. 11K005, Dougherty County **100**
79. 14P014, Crisp County **101**
Figure 80. Map showing locations of observation wells completed in Cretaceous aquifers and aquifer systems **103**
Figures 81-87. Hydrographs showing the water level in observation well:
81. 06S001, Chattahoochee County **104**
82. 12L021, Dougherty County **106**
83. 18U001, Twiggs County **108**
84. 18T001, Pulaski County **110**
85. 28X001, Burke County **111**
86. 30AA04, Richmond County **113**
87. 23X027, Washington County **114**
Figure 88. Map showing location of observation well completed in Paleozoic rock aquifers **116**
89. Hydrograph showing the water level in observation well 03PP01, Walker County **117**
90. Map showing locations of observation wells completed in crystalline-rock aquifers **119**
Figures 91-95. Hydrographs showing the water level in observation well:
91. 10DD02, Fulton County **120**
92. 19HH12, Madison County **121**
93. 11FF04, DeKalb County **122**
94. 21BB04, Greene County **123**
95. 16MM03, White County **124**
Figure 96. Map showing locations of chloride monitoring wells completed in the Floridan aquifer system in the Savannah area **127**
Figure 97. Graphs showing chloride concentrations in water from the Upper and Lower Floridan aquifers in the Savannah area **128**
98. Map showing locations of chloride-monitoring wells completed in the Floridan aquifer system in the Brunswick area **130**
Figures 99-100. Graphs showing chloride concentration in water from the:
99. Floridan aquifer system in the southern Brunswick area **131**
100. Upper Floridan aquifer in the northern Brunswick area **132**

TABLES

Table 1. Previous Ground-Water Conditions Reports **3**
2. Aquifer and well characteristics in Georgia **16**
3. Observation wells for which hydrographs are included in this report **18**
4. Observation wells for which chloride-concentration graphs are included in this report **125**

CONVERSION FACTORS AND VERTICAL DATUM

CONVERSION FACTORS

Multiply	*by*	*to obtain*
Length		
inch (in.)	2.540	centimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
Volume		
gallon per minute (gal/min)	0.06309	liter per second
million gallons per day (Mgal/d)	0.04381	cubic meter per second
	43.81	liter per second

VERTICAL DATUM

Sea Level:—In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Sea Level Datum of 1929."

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ABSTRACT

Ground-water conditions during 1994 and period of record in Georgia were evaluated using data from precipitation, ground-water-level, and ground-water-quality monitoring networks. Data for 1994 included in this report are from precipitation records from 10 National Weather Service (NWS) stations, continuous water-level records from 72 wells, and chloride analyses from 13 wells.

Cumulative departure from normal precipitation in 1994 was above normal at 9 of the 10 NWS sites. Cumulative departure from normal precipitation for the 10-year period (1985-94) was above normal at 6 of the 10 stations.

Annual mean ground-water levels in Georgia in 1994 ranged from about 2.3 feet (ft) lower to about 18.3 ft higher than in 1993. Of the 72 wells summarized in this report, 51 wells had annual mean water levels that were higher, 20 wells had annual mean water levels that were lower and one well had an annual mean water level that was the same in 1994 as in 1993. Record-high daily mean water levels were recorded in two wells tapping the surficial aquifer, one well tapping the Upper Floridan aquifer, one well tapping the Lower Floridan aquifer, two wells tapping the Claiborne aquifer, and one well tapping the Midville aquifer system. These record highs were from about 0.3 foot (ft) to about 1.8 ft higher than previous record highs. Record-low daily mean water levels were recorded in one well tapping the Clayton aquifer, and one well tapping the Dublin-Midville aquifer system. These record lows were from about 0.3 to 1.3 ft lower than previous record lows.

Chloride concentration in water from the Upper Floridan aquifer in most of coastal Georgia was below drinking-water standards established by the Georgia Department of Natural Resources and the U.S. Environmental Protection Agency and has not changed appreciably with time. However, chloride concentration in water from some wells that tap the Floridan aquifer system in the Brunswick area exceeds the drinking-water standards.

INTRODUCTION

Ground-water-level and ground-water-quality data are essential for water assessment and management. Ground-water-level fluctuations and trends can be used to estimate changes in aquifer storage resulting from the effects of ground-water withdrawal and recharge from precipitation. These data can be used to address water-management needs and to evaluate the effects of management and conservation programs.

As part of the ground-water investigations undertaken by the U.S. Geological Survey (USGS), in cooperation with the State of Georgia and city and county governments, a statewide water-level-measurement program was started in 1938. Initially, this program consisted of an observation-well network in the coastal area of Georgia to monitor variations in ground-water storage and quality. Additional wells were included later in areas where the data could be used to predict potential water-resources problems.

During 1994, periodic water-level measurements were made in 434 wells, and continuous water-level measurements were obtained from an additional 156 wells. Continuous water-level records were obtained using analog (pen and chart) recorders, digital recorders that record water levels at 30-minute (min) or 60-min intervals, and electronic data recorders that record water levels at 60-min intervals. For wells having incomplete water-level record, water levels during periods of missing record may have been higher or lower than recorded water levels. Water samples from 20 wells collected during July, November, and December of 1994 were analyzed to determine chloride concentration in the Savannah and Brunswick areas.

Purpose and Scope

The purpose of this report is to present selected precipitation, ground-water-level, and water-quality data for Georgia for calendar year 1994. Graphs showing precipitation for 10 National Weather Service stations and for ground-water levels in 72 wells are presented. Graphs showing chloride concentrations of water from 13 wells tapping the Floridan aquifer system in the Savannah and Brunswick areas are included. The text includes a brief discussion of the aquifers and the aquifer systems, ground-water levels, and chloride concentration in water. An extensive list of references of water-resources investigations are presented in "Selected References" and previously published reports on Georgia ground-water conditions are listed in table 1.

Well-Numbering System

Wells described in this report are numbered according to a system based on the USGS index of topographic maps of Georgia. Each 7 1/2 minute topographic quadrangle in the State has been assigned a six-digit number and letter designation beginning at the southwestern corner of the State. Numbers increase sequentially eastward and letters advance alphabetically northward. Quadrangles in the northern part of the State are designated by double letters; AA follows Z, and so forth. The letters "I", "O", "II", and "OO" are not used. Wells inventoried in each quadrangle are numbered consecutively, beginning with 01. Thus, the fourth well scheduled in the 11AA quadrangle is designated 11AA04.

Table 1.—Previous Ground-Water Conditions Reports
[USGS, U.S. Geological Survey]

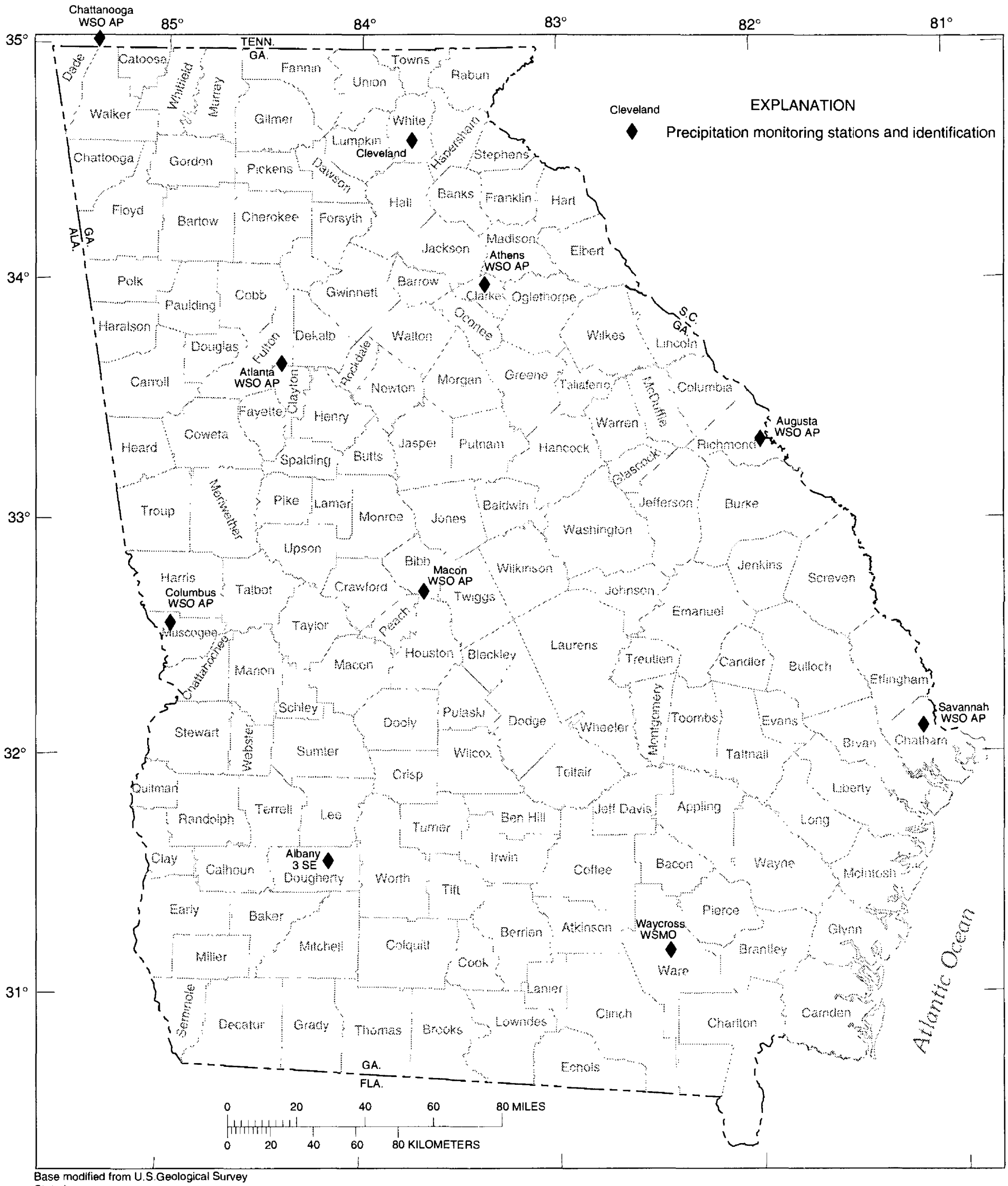
Year of data collection	USGS Open-File Report number	Authors	Year of data publication
1977	79-213	None listed.	1978
1978	79-1290	Clarke, J.S., Hester, W.G., and O'Byrne, M.P.	1979
1979	80-501	Mathews, S.E, Hester, W.G., and O'Byrne, M.P.	1980
1980	81-1068	Mathews, S.E., Hester, W.G., and O'Byrne, M.P.	1981
1981	82-904	Mathews, S.E., Hester, W.G., and McFadden, K.W.	1982
1982	83-678	Stiles, H.R., and Mathews, S.E.	1983
1983	84-605	Clarke, J.S., Peck, M.F., Longsworth, S.A., and McFadden, K.W.	1984
1984	85-331	Clarke, J.S., Longsworth, S.A., McFadden, K.W., and Peck, M.F.	1985
1985	86-304	Clarke, J.S., Joiner, C.N., Longsworth, S.A., McFadden, K.W., and Peck, M.F.	1986
1986	87-376	Clarke, J.S., Longsworth, S.A., Joiner, C.N., Peck, M.F., McFadden, K.W., and Milby, B.J.	1987
1987	88-323	Joiner, C.N., Reynolds, M.S., Stayton, W.L., and Boucher, F.G.	1988
1988	89-408	Joiner, C.N., Peck, M.F., Reynolds, M.S., and Stayton, W.L.	1989
1989	90-706	Peck, M.F., Joiner, C.N., Clarke, J.S., and Cressler, A.M.	1990
1990	91-486	Milby, B.J., Joiner, C.N., Cressler, A.M., and West, C.T.	1991
1991	92-470	Peck, M.F., Joiner, C.N., and Cressler, A.M.	1992
1992	93-358	Peck, M.F., and Cressler, A.M.	1993
1993	94-118	Joiner, C.N., and Cressler, A.M.	1994

PRECIPITATION

Recharge to the ground-water system in Georgia is derived almost entirely from precipitation. Records for 1941-70 indicate that annual precipitation averaged 50 inches (in.) statewide, and ranged from 44 in. in the east-central part to about 76 in. in the northeastern corner of the State. Of the total annual precipitation, about 88 percent runs off to streams or is lost to evapotranspiration, and about 12 percent enters the ground-water system as recharge (Carter and Stiles, 1983).

Monthly mean precipitation data furnished by the National Oceanic and Atmospheric Administration (1994) are shown graphically for 10 precipitation stations (figs. 2-11). For each station, monthly precipitation was compared to the 30-year (yr) (1961-90) average (normal) for the station. Cumulative departure curves are a method often used to illustrate surplus or deficit amounts of precipitation over a designated period of time. The curves used in this report were obtained by adding successive monthly values of precipitation departures from normal. Thus, the annual cumulative departure through December represents the sum of all monthly deficits and surpluses during the year. The 10-yr cumulative departure at the end of December represents the sum of all monthly deficits and surpluses for the previous 119 months. For each of the precipitation stations, the lower graph (figs. 2-11) shows the cumulative departure from normal precipitation for the period 1985-94; the upper graph shows the monthly departure and cumulative departure for 1994.

Cumulative departure from normal precipitation in 1994 for the 10 stations (figs. 2-11), ranged from about 1.7 in. below normal to about 21.3 in. above normal. For the 10-yr period (1985-94), the cumulative departure from normal precipitation ranged from about 33.2 in. below normal to about 31.8 in. above normal.



Base modified from U.S.Geological Survey
State base map

Figure 1.—Locations of precipitation monitoring stations.

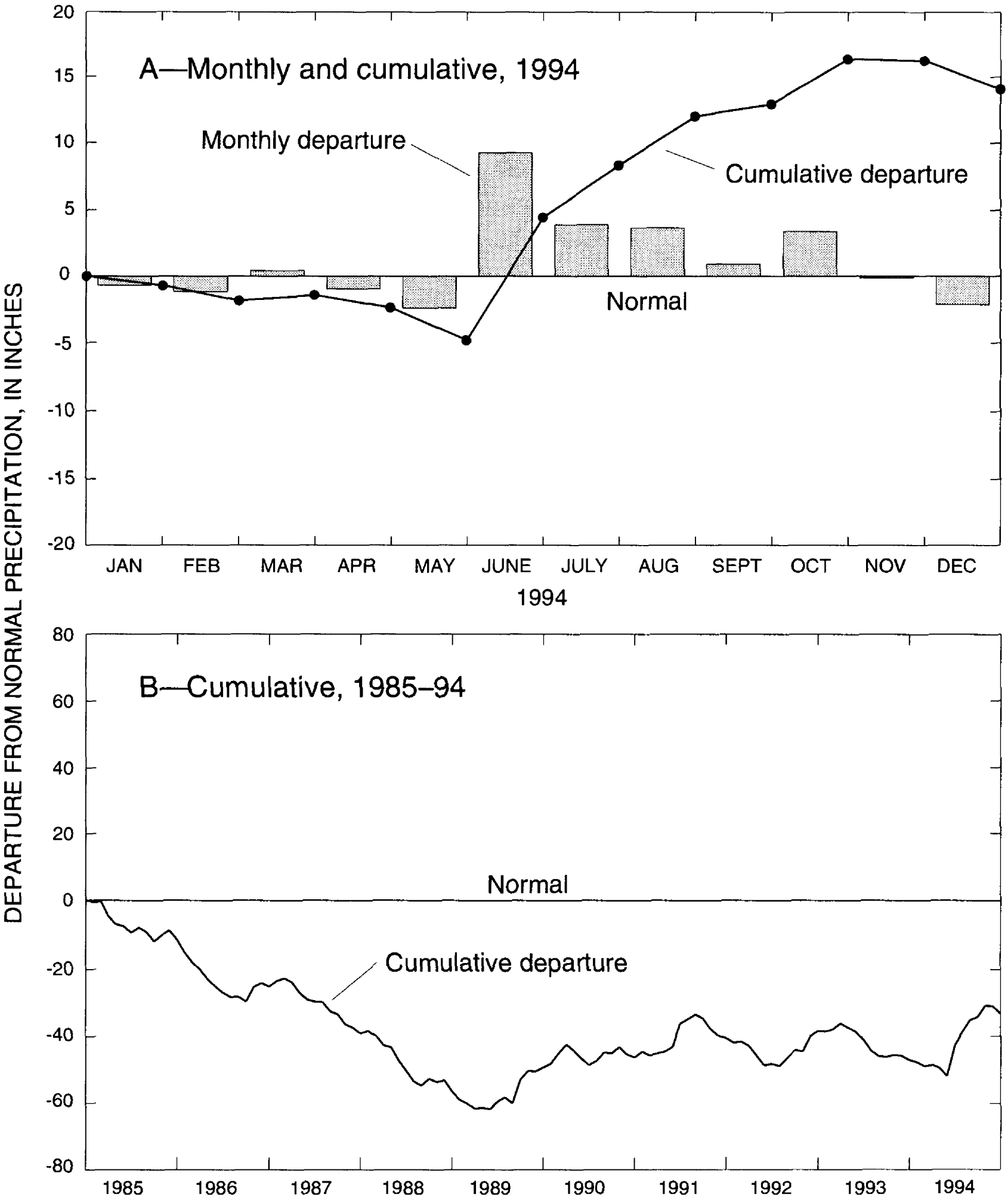


Figure 2.—Departure from normal precipitation (1961-90), National Weather Service station, Athens airport, Clarke County, Georgia.

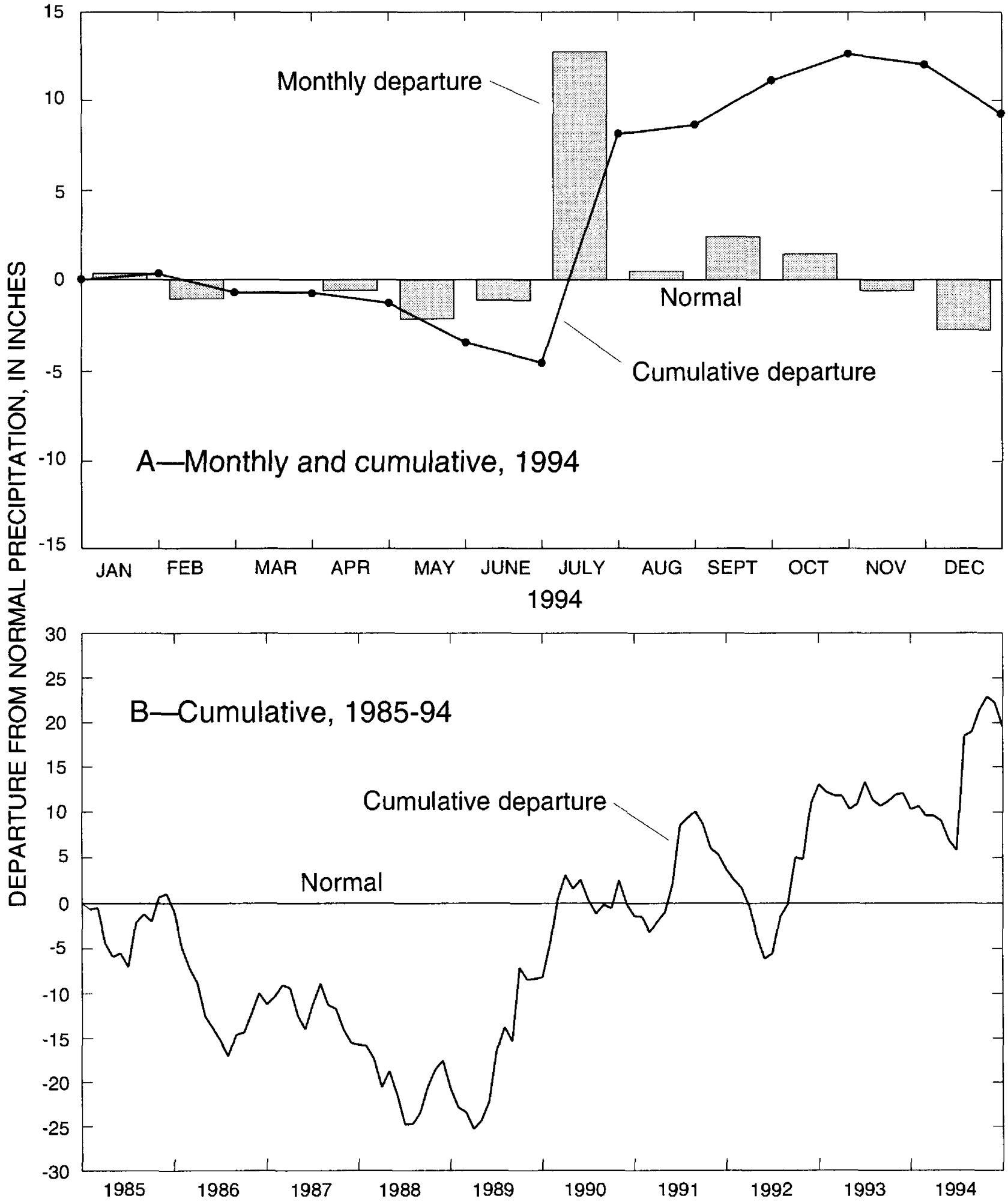


Figure 3.—Departure from normal precipitation (1961-90), National Weather Service station at Atlanta airport, Fulton County, Georgia.

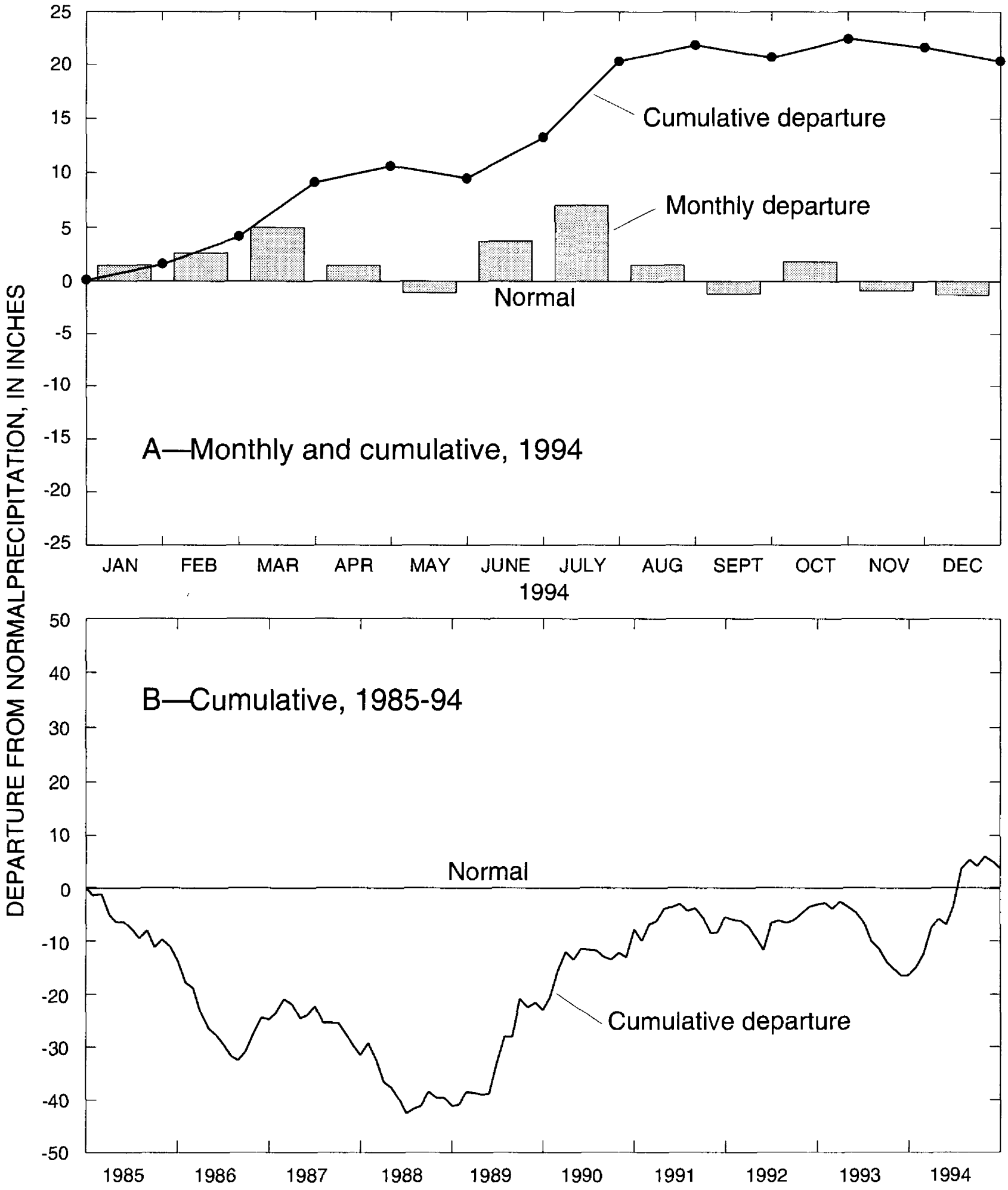


Figure 4.—Departure from normal precipitation (1961-90), National Weather Service station Chattanooga airport, Hamilton County, Tennessee.

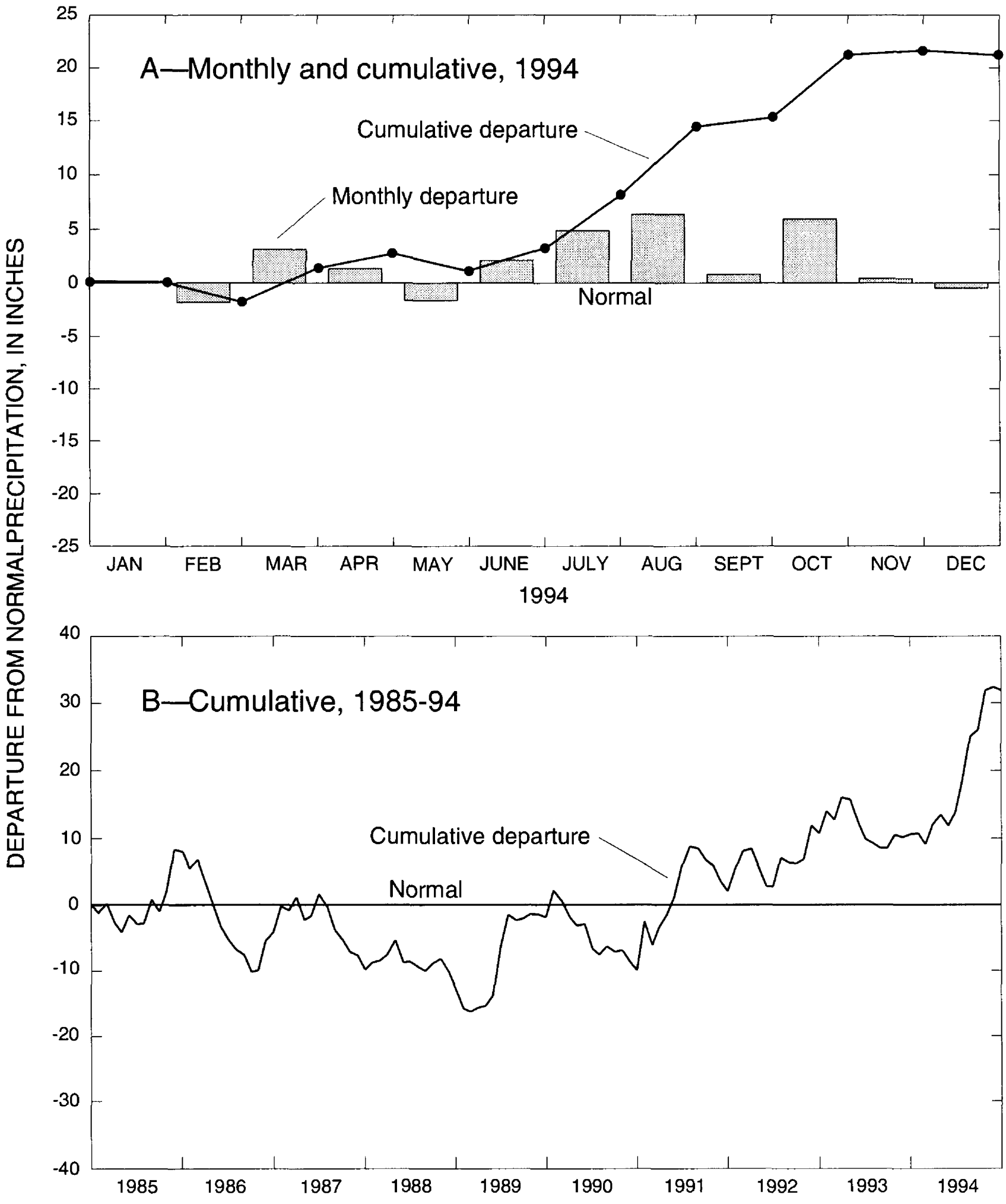


Figure 5.—Departure from normal precipitation (1961-90), National Weather Service station, Albany 3SE, Dougherty County, Georgia.

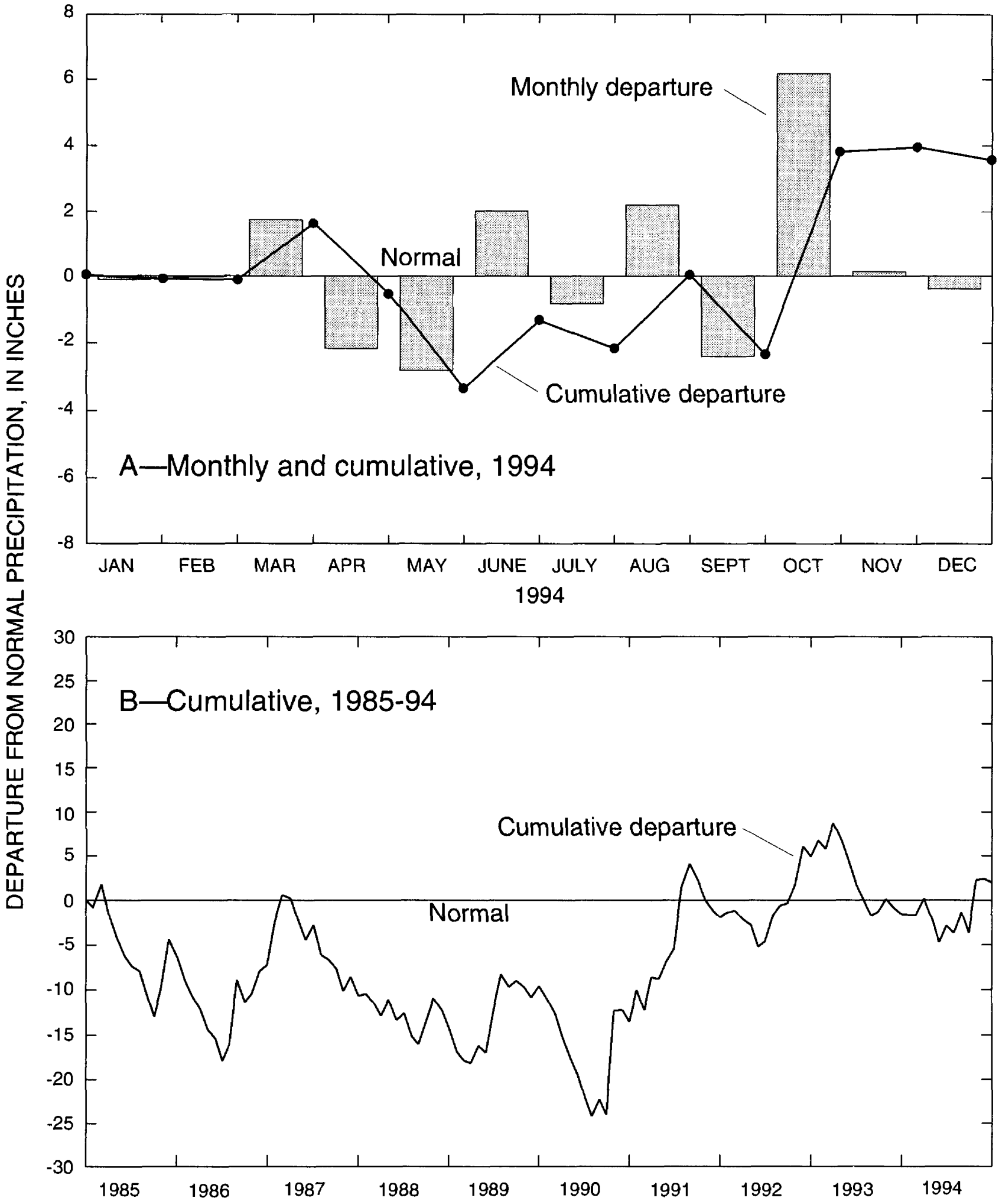


Figure 6.—Departure from normal precipitation (1961-90), National Weather Service station, Augusta airport, Richmond County, Georgia.

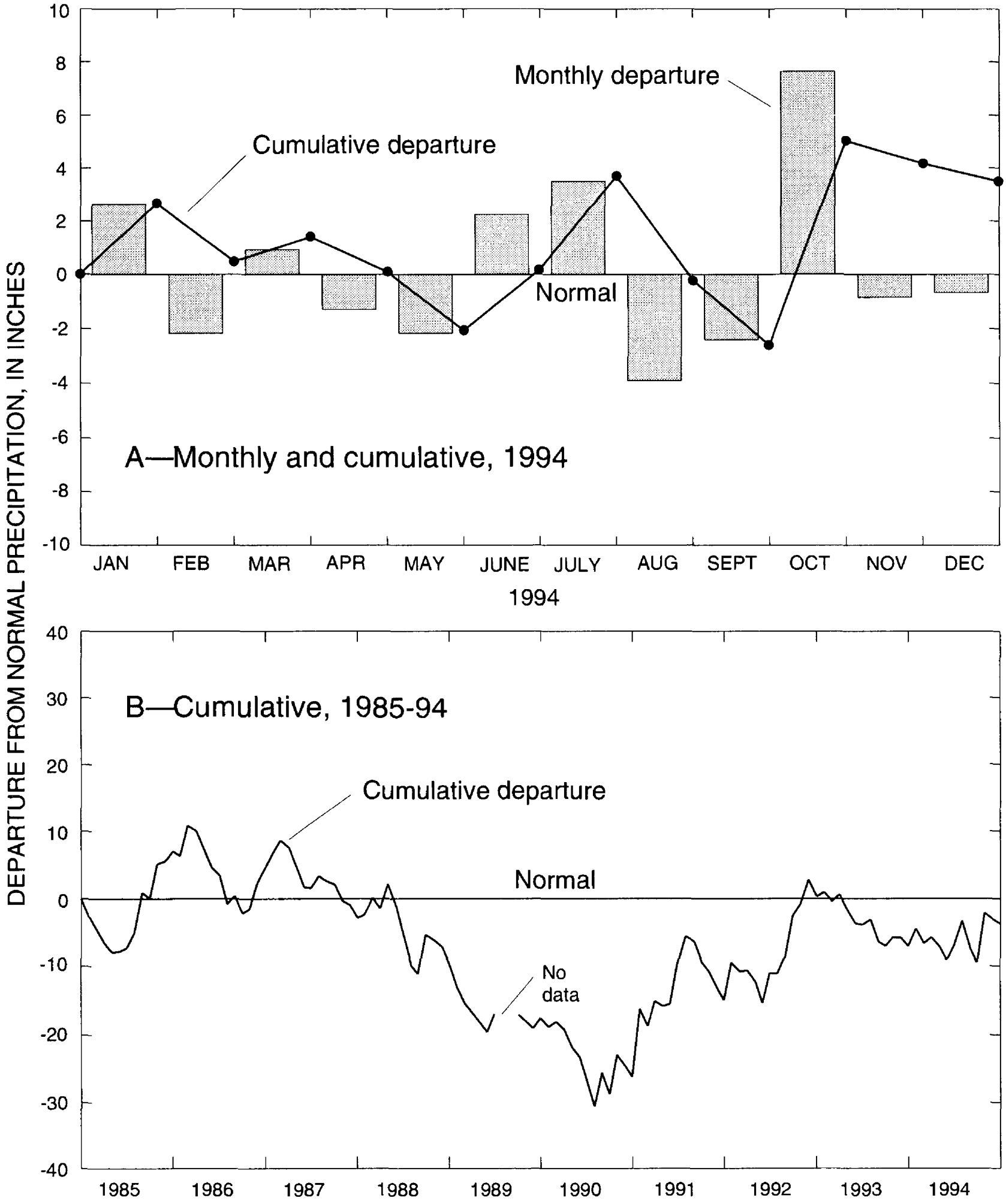


Figure 7.—Departure from normal precipitation (1960-90), National Weather Service station, Waycross WSMO, Ware County, Georgia.

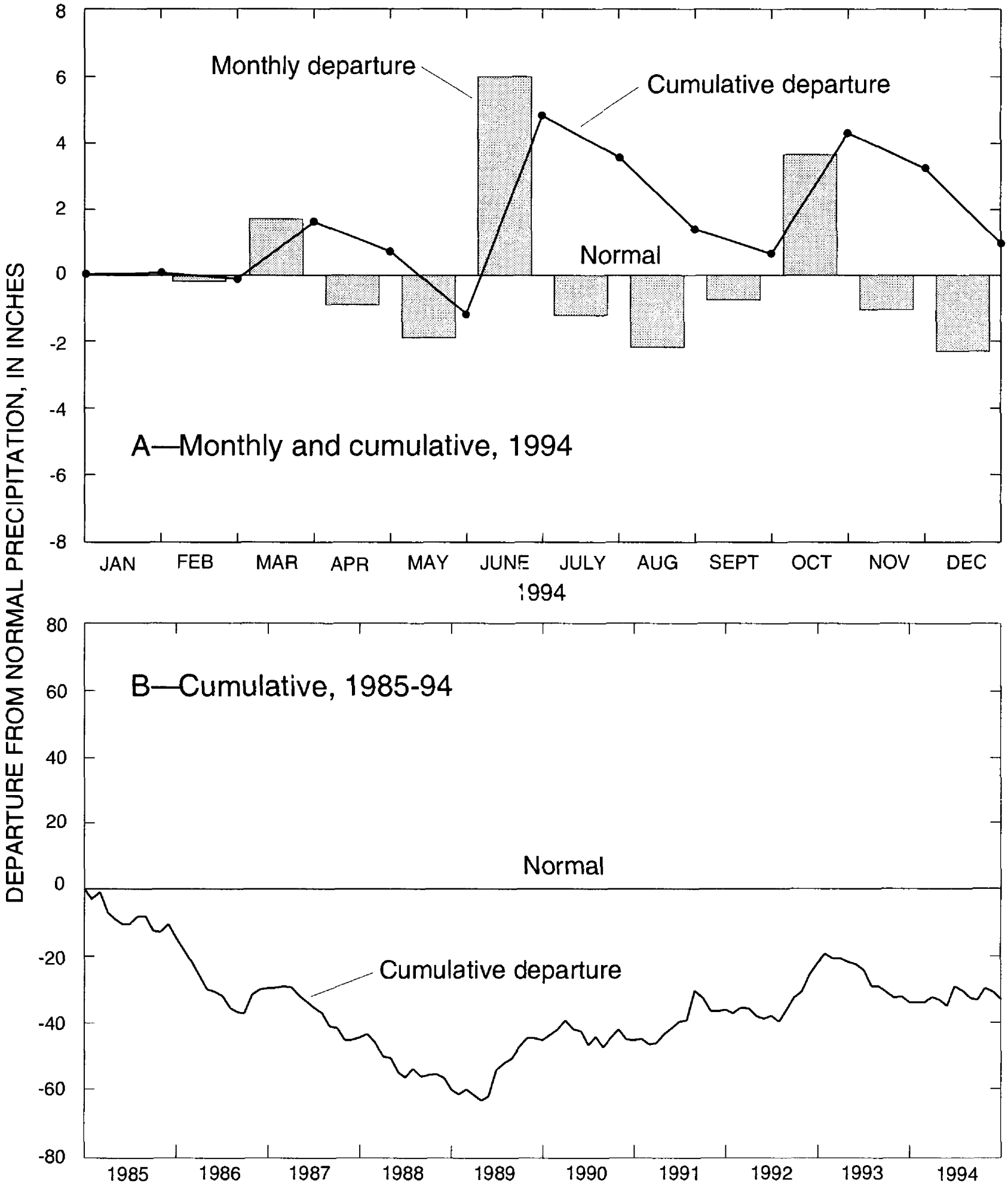


Figure 8.—Departure from normal precipitation (1961-90), National Weather Service station, Cleveland, White County, Georgia.

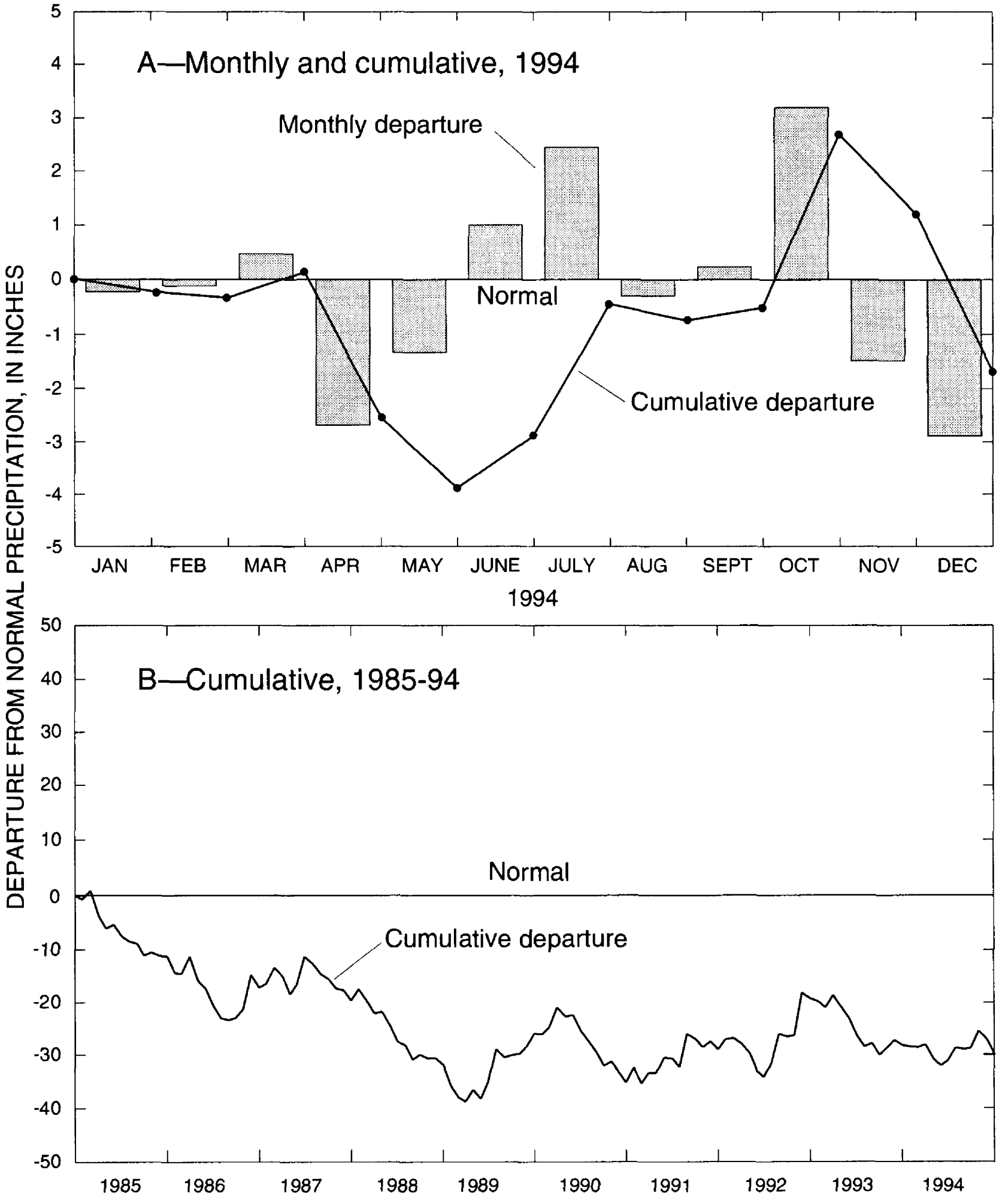


Figure 9.—Departure from normal precipitation (1961-90), National Weather Service station, Columbus airport, Muscogee County, Gerogia.

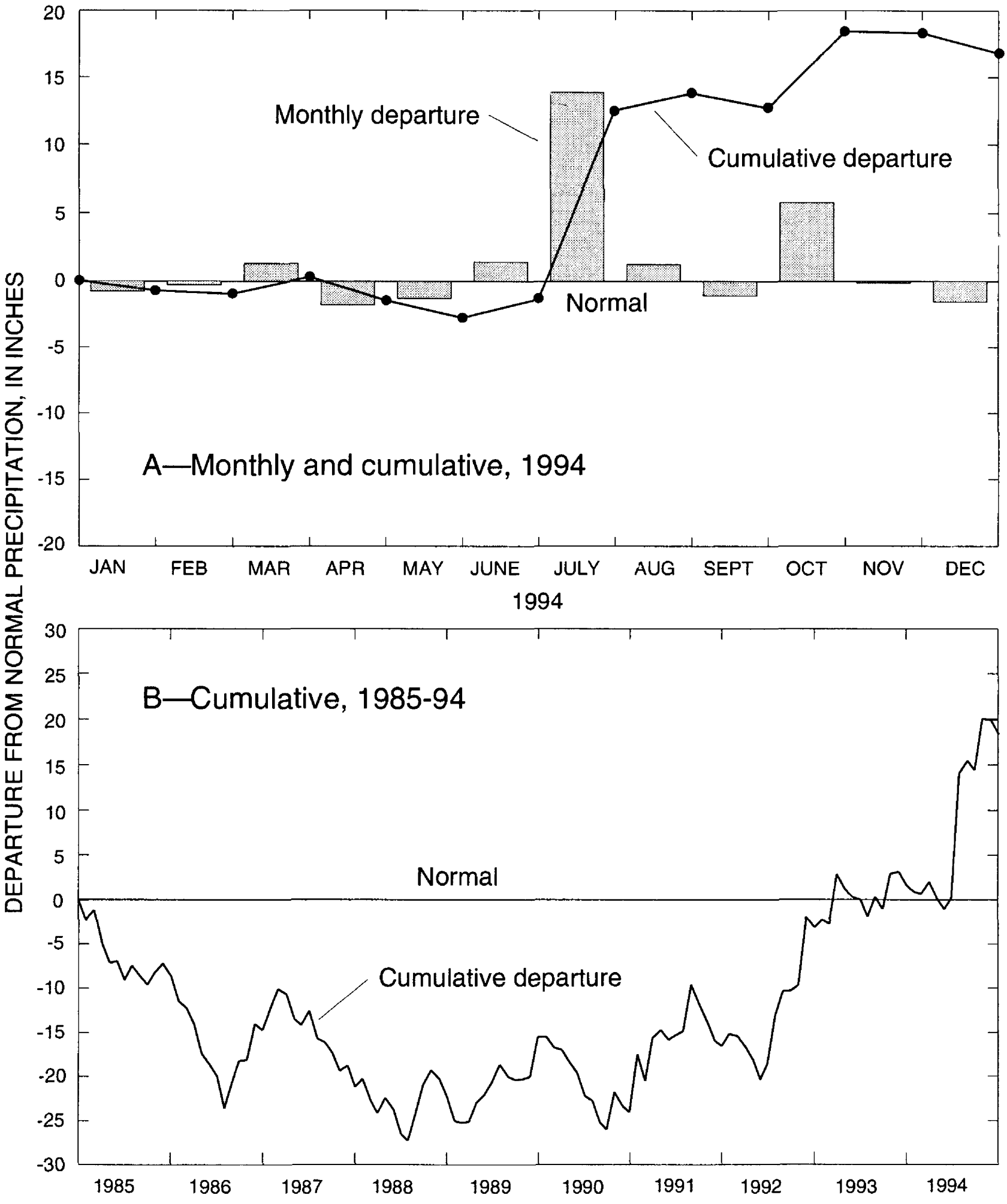


Figure 10.—Departure from normal precipitation (1961-90), National Weather Service station, Macon airport, Bibb County, Georgia.

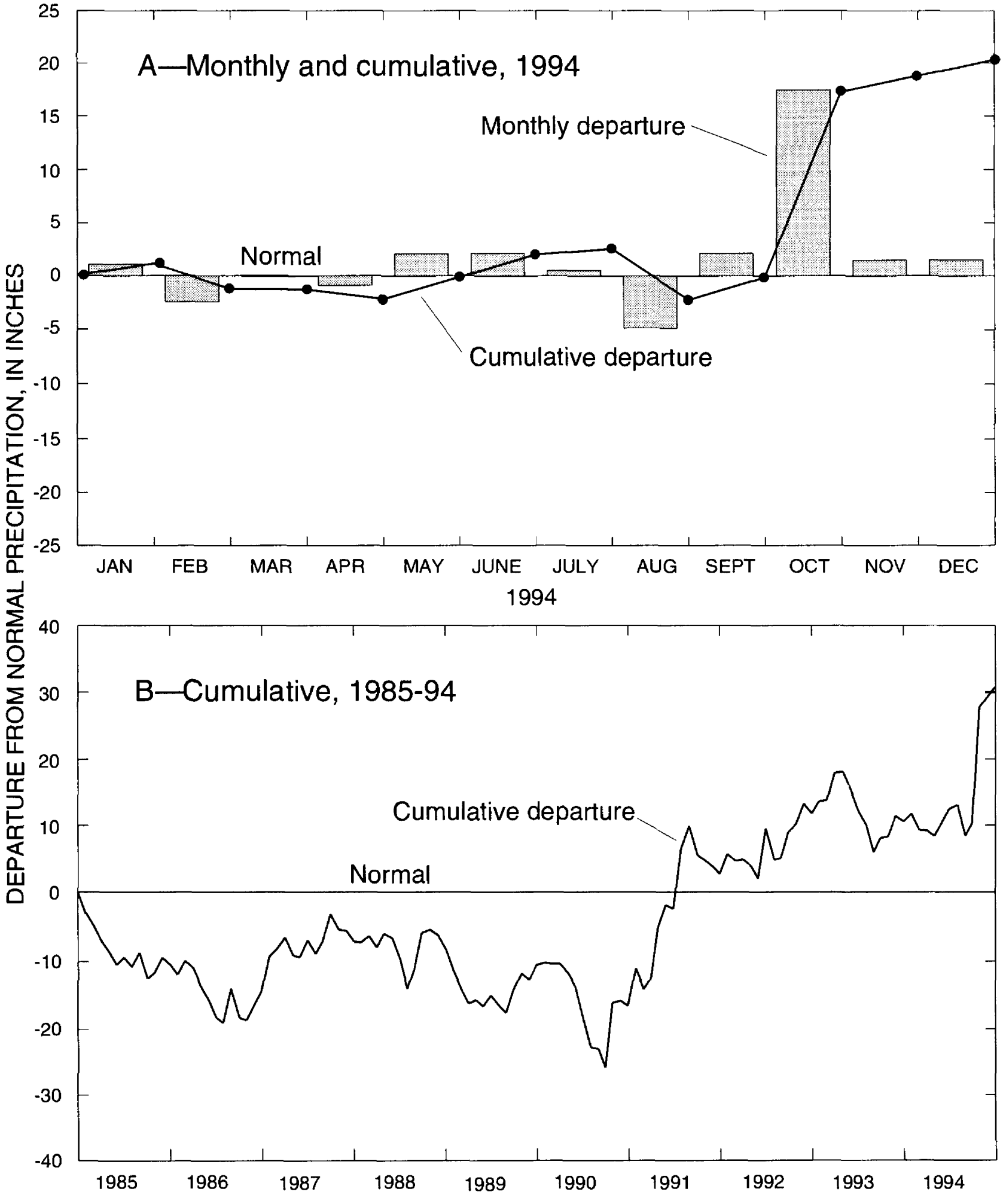


Figure 11.—Departure from normal precipitation (1961-90), National Weather Service station, Savannah airport, Chatham County, Gerogia.

GROUND-WATER RESOURCES

Contrasting geologic features and landforms of the physiographic provinces of Georgia (table 2, fig. 12) result in substantial differences in ground-water conditions from one part of the State to another. These features that make up the framework of the aquifers affect the quantity and quality of the ground water throughout the State.

Surficial aquifers are present in each of the physiographic provinces. In the Piedmont, Blue Ridge, and Valley and Ridge Provinces (fig. 12), the surficial aquifers consist of soil, saprolite, stream alluvium, colluvium, and other surficial deposits. In the Coastal Plain Province, the surficial aquifers consist of intermixed layers of sand, clay, and limestone. The surficial aquifers usually are under water-table (unconfined) conditions and are used for domestic and livestock supplies. These aquifers can be semiconfined locally in the coastal area.

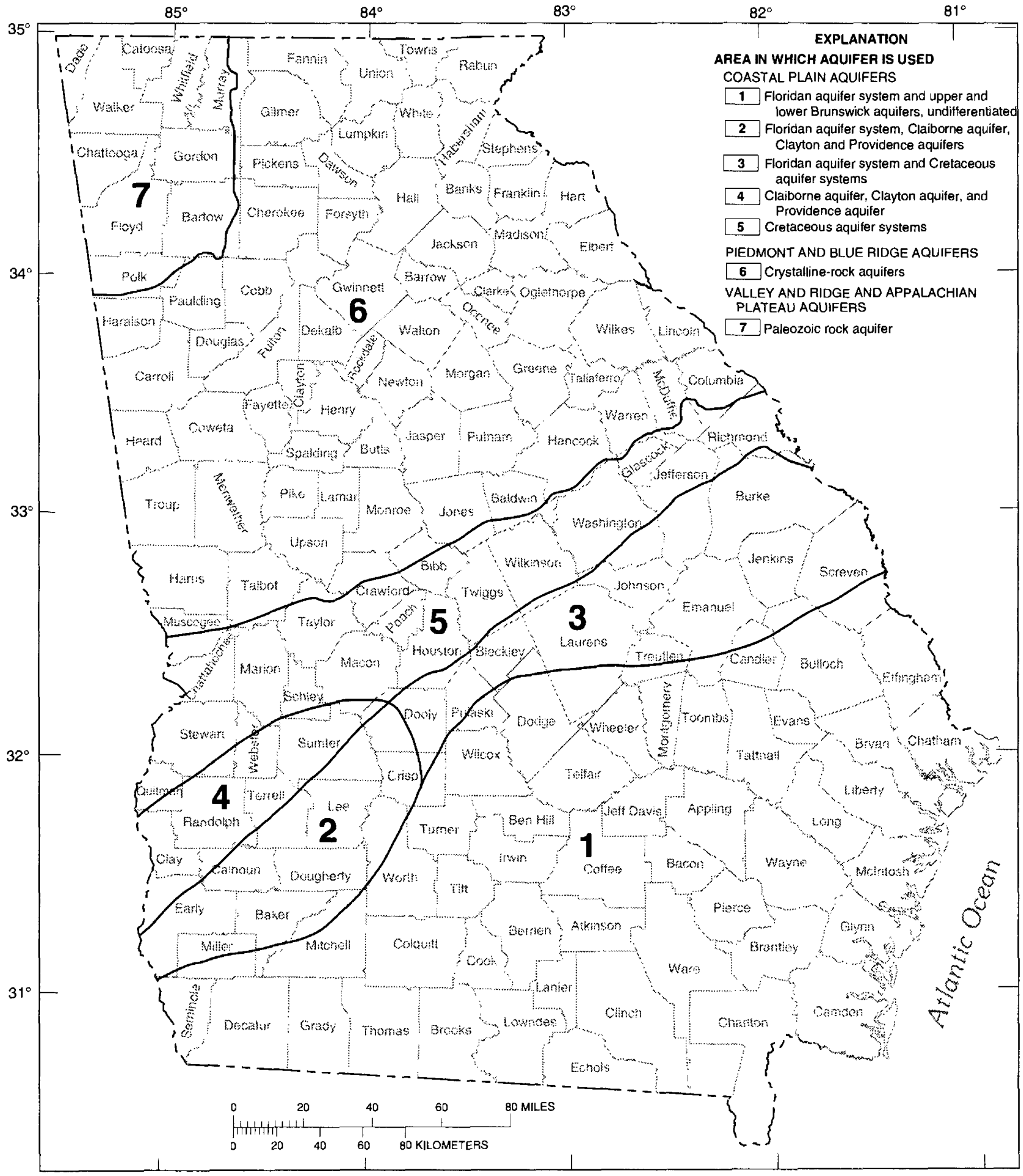
In the Piedmont and Blue Ridge Provinces, rocks are complex and consist of structurally deformed metamorphic and igneous rocks. Ground water is transmitted through secondary openings along fractures, foliation, joints, contacts, or other features in the crystalline bedrock. In the Valley and Ridge Province, ground water is transmitted through both primary and secondary openings in folded and faulted sedimentary and meta-sedimentary rocks.

The most productive aquifers in Georgia are in the Coastal Plain Province in the southern part of the State. The Coastal Plain is underlain by alternating layers of sand, clay, and limestone that dip and thicken to the southeast. In the Coastal Plain, aquifers generally are confined, except near their northern limits where they crop out or are near land surface. The aquifers of the Coastal Plain include surficial aquifers, the upper Brunswick aquifer, the lower Brunswick aquifer, the Floridan aquifer system, the Claiborne aquifer, the Clayton aquifer, and the Cretaceous aquifers and aquifer systems.

Table 2.—Aquifer and well characteristics in Georgia

[Modified from Clarke and Pierce (1984) and Peck and others (1992); ft, feet; gal/min, gallons per minute]

Aquifer name and description	Well characteristics: Depth (ft) Common range	Well characteristics: Yield (gal/min) Common range	Well characteristics: Yield (gal/min) May exceed	Remarks
Surficial aquifers: Unconsolidated sediments, generally unconfined	11-72	2-25	25	Primary source of water for domestic and livestock supply in rural areas. Supplemental source of water in coastal Georgia.
Upper and Lower Brunswick aquifers: Phosphatic and dolomitic quartz sand, generally confined	85-390	10-30	180	Not a major source of water in coastal Georgia, but considered a supplemental water supply to the Upper Floridan aquifer. Most wells are multi-aquifer, tapping the upper and lower Brunswick aquifers and the Upper Floridan aquifer. The lower Brunswick aquifer currently is not monitored (see Clarke and others, 1990, p. 26-28).
Floridan aquifer system: Limestone, dolomite, and calcareous sand, generally confined	40-900	1,000-5,000	11,000	Supplies 50 percent of ground water in Georgia. The aquifer system is divided into the Upper and Lower Floridan aquifers. In the Brunswick area, the Upper Floridan aquifer includes two freshwater-bearing zones, the upper water-bearing zone and the lower water-bearing zone. The Lower Floridan aquifer is not considered a major aquifer. In the Brunswick area and southeastern Georgia, the Lower Floridan aquifer includes the Fernandina permeable zone (Krause and Randolph, 1989), which extends to more than 2,700 ft and yields high-chloride water below 2,300 ft (Jones and Maslia, 1994).
Claiborne aquifer: Sand and sandy limestone generally confined	20-450	150-600	1,500	Major source of water for irrigation, industrial, and public supply use in southwestern Georgia.
Clayton aquifer: Limestone and sand, generally confined	40-800	250-600	2,150	Major source of water for irrigation, industrial, and public supply use in southwestern Georgia.
Cretaceous aquifers and aquifer systems: Sand and gravel, generally confined	30-750	50-1,200	3,300	Major source of water in east-central Georgia. Supplies water for kaolin mining and processing. Includes the Providence aquifer in southwestern Georgia, and the Dublin, Midville, and Dublin-Midville aquifer systems in east-central Georgia.
Paleozoic rock aquifers: Sandstone, limestone, and dolostone	15-2,100	1-50	3,500	Not laterally extensive. Limestone and dolostone aquifers are most productive. Storage is in regolith, primary openings, and secondary fractures and solution openings in rock. Springs in limestone and dolostone aquifers discharge at rates of as much as 5,000 gal/min. Sinkholes may form in areas of intensive pumping.
Crystalline-rock aquifers: Granite, gneiss, schist, and quartzite	40-600	1-25	500	Not laterally extensive. Storage is in regolith and fractures in rock. Hydrogeology of crystalline rock aquifers is not well understood.



Base modified from U.S.Geological Survey
State base map

Figure 12.—Areas of major aquifers and physiographic provicences of Georgia. [Modified from Peck and others, 1992]

GROUND-WATER LEVELS

Short-term fluctuation and long-term trends in ground-water levels are results of variations in recharge and discharge. Recharge varies in response to precipitation and surface-water infiltration into an aquifer. Discharge occurs as natural flow from an aquifer to streams and springs, as evapotranspiration and as withdrawal from wells.

Discussions of the ground-water levels in Georgia are grouped by aquifer and subdivided into areas and subareas in which wells had similar water-level fluctuations and trends. For each section, 1994 annual mean water levels are compared to 1993 annual mean water levels (Joiner and Cressler, 1994). Also given are all occurrences of record-low or record-high water levels in 1994. In these discussions, water-level differences are reported to the nearest 0.1 ft and the term "the same" is used for differences less than or equal to 0.1 ft.

Water-level fluctuations in 1994 are shown for 72 continuously monitored wells (table 3, fig. 13), which are considered to be representative of ground-water levels throughout the State. For each well, well-site information is listed, monthly mean water levels are shown in hydrographs for the period of record, daily mean water levels are shown in hydrographs for 1994, and monthly and annual water-level statistics (minimum, mean, and maximum daily mean water levels) are tabulated for 1994. Monthly statistics are not computed for months having less than 25 days of record. Extreme water levels for the period of record listed in the well-site information and tabulated water-level statistics are reported to the nearest 0.01 ft, reflecting the accuracy of the recorders used. In this report, an extreme water level refers to the lowest or highest daily mean water level for the period of record of a particular well. Thus, any instantaneous water-level measurement on a given day may be lower or higher than the extreme water level reported in the text, the daily mean water level shown on the hydrograph, or the minimum or maximum values tabulated.

Continuous records from the 72 wells indicate that annual mean ground-water levels were from 2.3 ft lower to 18.3 ft higher in 1994 than in 1993. The annual mean water level was higher in 51 wells, lower in 20 wells and the same in one well. Record-high daily mean water levels that were from 0.3 to 1.8 ft higher than the previous highs were recorded in seven wells; two tapping the surficial aquifer, one tapping the Upper Floridan aquifer, one tapping the Lower Floridan aquifer, two tapping the Claiborne aquifer, and one tapping the Midville aquifer system. Record-low daily mean water levels that were from 0.3 to 1.3 ft lower than the previous record lows were measured in two wells; one tapping the Clayton aquifer, and one tapping the Dublin-Midville aquifer system.

Table 3.—Observation wells for which hydrographs are included in this report

County	Aquifer	Well number	Site name	Page
Bulloch	Upper Floridan	32R002	GGS, Bulloch South, test well 1	64
Bulloch	surficial	32R003	GGS, Bulloch South, test well 2	29
Bulloch	Upper Brunswick	31U009	GGS, Hopeulikit, test well 2	34
Burke	Midville aquifer system	28X001	USGS, Midville, test well 1	111
Camden	Upper Floridan	33E027	U.S. Navy, Kings Bay, test well 1	77
Charlton	Upper Floridan	27E004	USGS, test well OK-9	78
Chatham	surficial	35P094	UGA, Bamboo Farm	27
Chatham	Upper Floridan	36Q008	Layne-Atlantic Co.	60
Chatham	Upper Floridan	36Q020	H.J. Morrison	61
Chatham	surficial	37P116	GGS, Skidaway Institute, test well 4	28
Chatham	Upper Floridan	38Q002	National Park Service, test well 6	62
Chatham	Upper Floridan	39Q003	USGS, test well 7	63
Chattahoochee	Cretaceous age formations	06S001	U.S. Army, Fort Benning	104
Cook	Upper Floridan	18H016	USGS, Adel test well	50
Crisp	Clayton	14P014	GGS, Veterans Memorial State Park, test well 1	101
Crisp	Claiborne	14P015	GGS, Veterans Memorial State Park, test well 2	92
Decatur	Upper Floridan	09F520	Graham Bolton	40
DeKalb	crystalline rock	11FF04	USGS, test well 5	122
Dougherty	Providence	12L021	USGS, test well 10	106
Dougherty	Claiborne	11K002	USGS, test well 11	87

Table 3.—Observation wells for which hydrographs are included in this report—Continued

County	Aquifer	Well number	Site name	Page
Dougherty	Clayton	11K005	USGS, test well 12	100
Dougherty	Clayton	11L002	GGS, Albany Nursery	98
Dougherty	Clayton	13L002	Albany Water, Gas, and Light, Turner City 2	99
Dougherty	Claiborne	11L001	USGS, test well 4	88
Dougherty	Claiborne	12L019	USGS, test well 5	89
Dougherty	Claiborne	13L011	USGS, test well 2	90
Dougherty	Upper Floridan	13L003	City of Albany and Dougherty County	45
Dougherty	Upper Floridan	13L012	USGS, test well 3	43
Early	Clayton	06K009	GGS, Kolomoki Mounds State Park, test well 1	95
Early	Claiborne	06K010	GGS, Kolomoki Mounds State Park, test well 2	85
Fulton	crystalline rock	10DD02	U.S. Army, Fort McPherson	120
Glynn	Upper Floridan	33H127	USGS, test well 3	72
Glynn	Upper Floridan	33H133	USGS, test well 6	74
Glynn	Lower Floridan	33J044	Georgia Pacific Company, USGS, test well 27	82
Glynn	Upper Floridan	34H371	USGS, test well 11	75
Glynn	Lower Floridan	34H391	USGS, test well 16	81
Glynn	Upper Floridan	34H403	USGS, test well 24	73
Glynn	Upper Brunswick	34H437	GGS, Coffin Park, test well 2	36
Glynn	surficial	34H438	GGS, Coffin Park, test well 3	30
Greene	crystalline rock	21BB04	Charles Veazey	123
Laurens	Upper Floridan	21T001	Danny Hogan	54
Liberty	Upper Floridan	34N089	USGS, test well 1	65
Long	Upper Floridan	33M004	USGS, test well 3	70
Lowndes	Upper Floridan	19E009	City of Valdosta	51
Lowndes	Upper Floridan	19F039	City of Valdosta, well 8	52
Madison	crystalline rock	19HH12	Meadowlake Estates	121
McIntosh	Upper Floridan	35M013	U.S. Fish and Wildlife Service	66
Miller	surficial	07H003	USGS, test well DP-3	25
Miller	Upper Floridan	08G001	Viercocken	41
Mitchell	Upper Floridan	10G313	Harvey Meinders	44
Mitchell	Upper Floridan	13J004	Aurora Dairy	46
Montgomery	Upper Floridan	25Q001	Montgomery County Board of Education	55
Pulaski	Midville aquifer system	18T001	USGS, Arrowhead, test well 1	110
Randolph	Clayton	07N001	City of Cuthbert	96
Randolph	Claiborne	09M009	C.T. Martin, test well 1	86
Richmond	Dublin-Midville aquifer system	30AA04	Richmond County water system, USGS, McBean 2	113
Seminole	Upper Floridan	06F001	Roddenbery Company Farms, test well 1	42
Spalding	surficial	11AA01	UGA, Experiment Station	23
Terrell	Clayton	09N001	Bill Newman	97
Tift	Upper Floridan	18K049	USGS, test well 1	49
Toombs	Upper Floridan	26R001	City of Vidalia, well 2	56
Twiggs	Dublin aquifer system	18U001	Georgia Kraft, USGS, test well 3	108
Walker	Paleozoic rock	03PP01	National Park Service, Chickamauga Battlefield Park	117
Washington	Dublin-Midville aquifer system	23X027	City of Sandersville, well 8	114
Wayne	Upper Floridan	30L003	City of Jesup Housing Authority	68
Wayne	Upper Floridan	32L015	GGS, Gardi, test well 1	69
Wayne	Upper Brunswick	32L016	GGS, Gardi, test well 2	35
Wayne	surficial	32L017	GGS, Gardi, test well 3	31
White	crystalline rock	16MM03	Unicoi State Park, well 4	124
Worth	Claiborne	13M005	USGS, test well DP-7	91
Worth	surficial	13M007	USGS, test well DP-9	24
Worth	Upper Floridan	15L020	City of Sylvester	47

Base modified from U.S.Geological Survey
State base map

Figure 13.—Locations of observation wells for which hydrographs are included on this report.

Surficial Aquifers

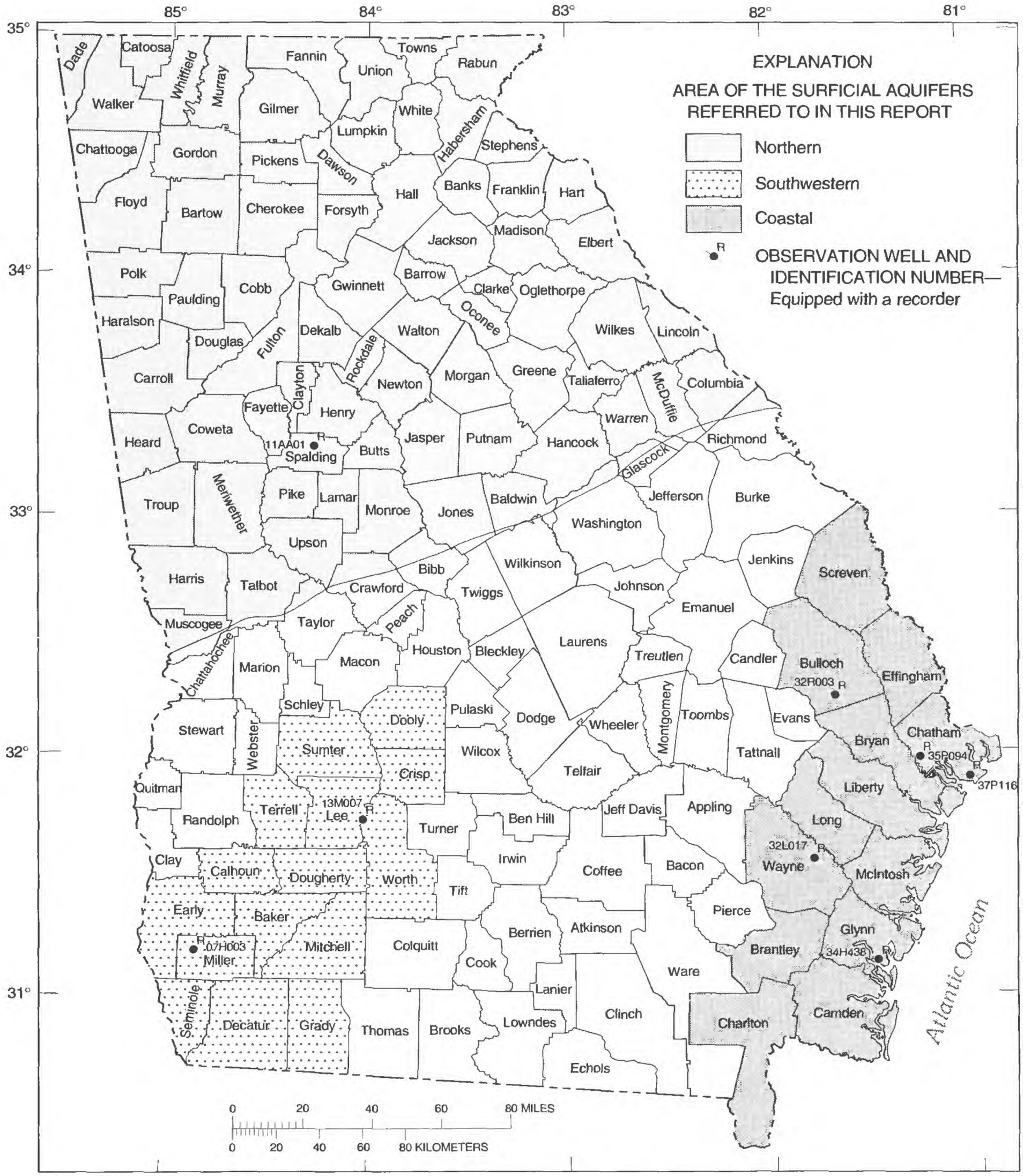
Water-level fluctuations in surficial aquifers were monitored in 15 wells in 1994 and data from eight of these wells (fig. 14) are summarized in this report. Water-level fluctuations in surficial aquifers mainly were caused by variations in precipitation, evapotranspiration, and natural drainage. Water levels in surficial aquifers generally rise rapidly during wet periods and decline slowly during dry periods. Prolonged droughts may cause water levels to decline below pump intakes in shallow wells, particularly those located on hilltops and steep slopes, resulting in temporary well failures. Usually, well yields are restored with an increase in precipitation.

Northern area

Water-levels in the surficial aquifers in the northern part of Georgia were monitored in two wells in 1994. Data for one of these wells, 11AA01, at Griffin, Spalding County, is shown in figure 15. The annual mean water level in well 11AA01 was 1.7 ft higher in 1994 than in 1993. The water level in well 11AA01 increased rapidly in early July, coinciding with rainfall and flooding associated with Tropical Storm Alberto (Hicks, 1995).

Southwestern area

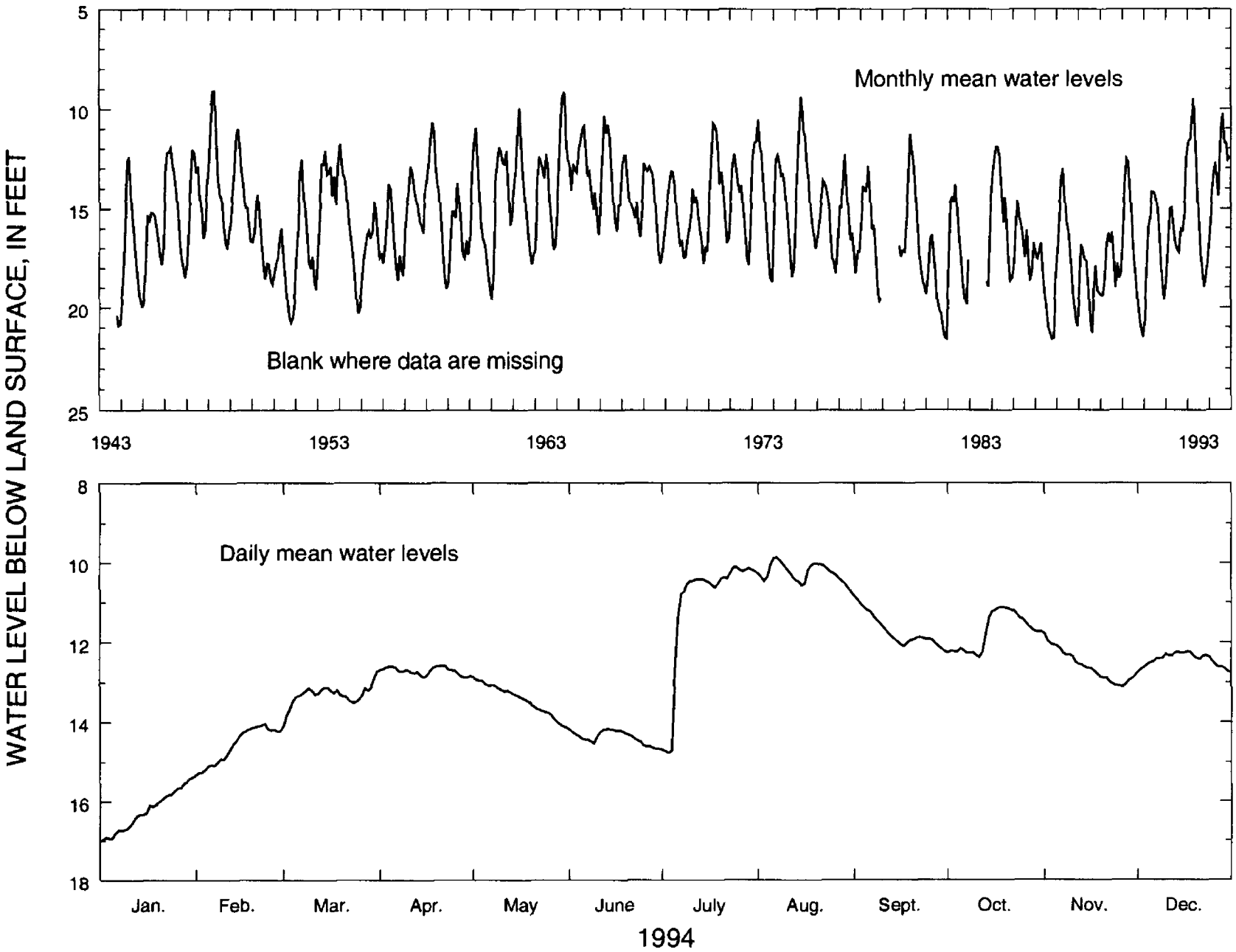
Water levels were monitored in seven wells that tap the surficial aquifer in the southwestern area in 1994. Data for two of the wells are shown in figures 16 and 17. The 1994 mean water levels in well 13M007 (fig. 16) in Worth County and well 07H003 (fig. 17) in Miller County were 1.0 and 4.3 ft higher than in 1993, respectively.



Base modified from U.S.Geological Survey
State base map

Figure 14.—Locations of observation wells completed in the surficial aquifers.

331507084171801 Local number, 11AA01.
LOCATION.—Lat 33°15′54″, long 84°16′56″, Hydrologic Unit 03070103.
SITE NAME.—University of Georgia, Experiment Station.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Surficial (residuum).
WELL CHARACTERISTICS.—Dug unused supply well, size 4 x 4 ft, depth 30 ft, cased to 30 ft, open end.
DATUM.—Altitude of land-surface datum is 950 ft.
REMARKS.—None.
PERIOD OF RECORD.—October 1943 to current year. Continuous record since October 1943.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 8.26 ft below land-surface datum, March 19, 1948; lowest, 21.82 ft below land-surface datum, November 18-19, 1986.

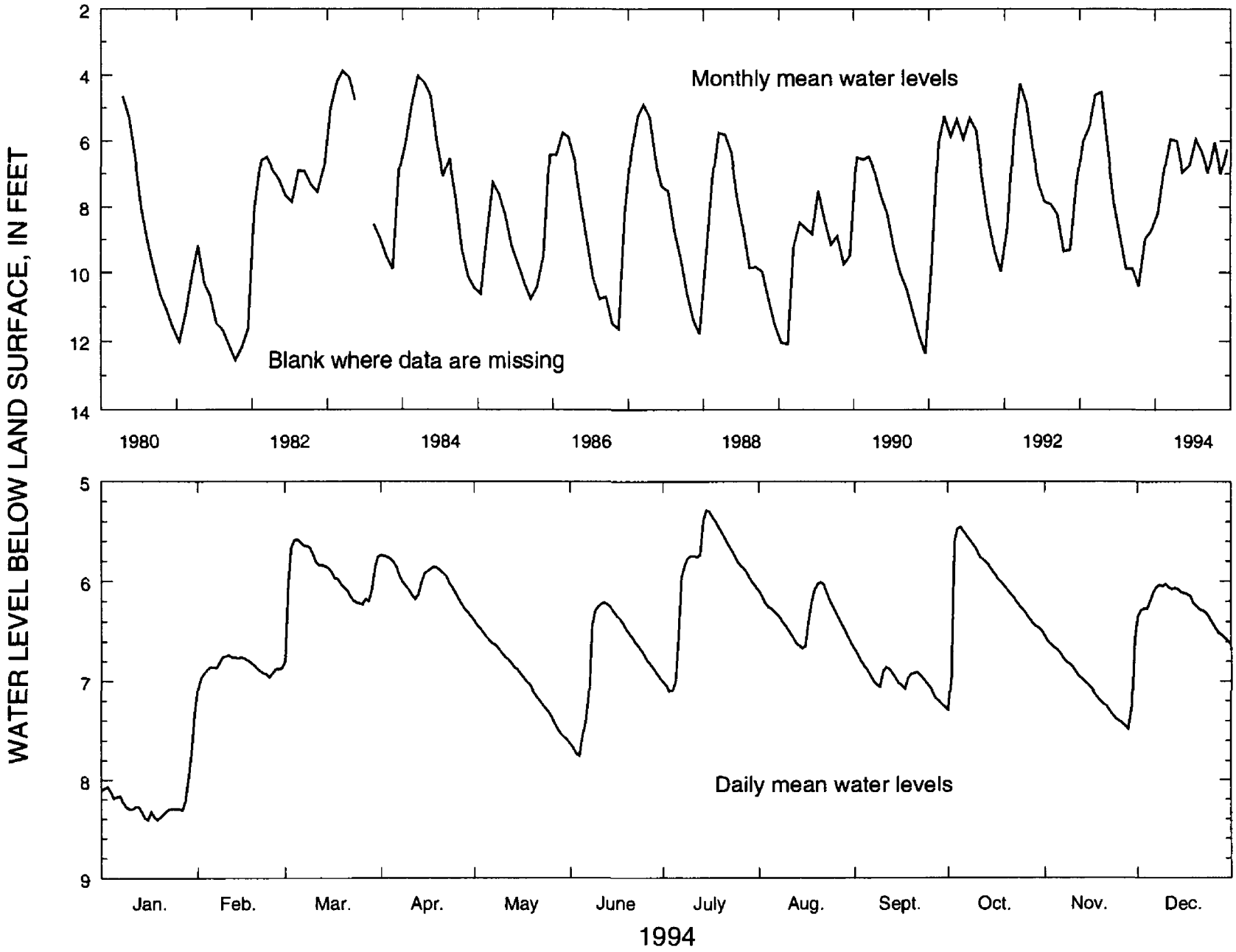


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	15.38	14.04	12.73	12.58	12.85	14.17	10.11	9.87	10.85	11.12	11.79	12.23
MEAN	16.24	14.57	13.31	12.71	13.43	14.38	11.05	10.26	11.72	11.73	12.60	12.44
LOW	17.01	15.32	14.09	12.87	14.13	14.68	14.77	10.76	12.23	12.37	13.11	12.75

SUMMARY FOR 1994 HIGH 9.87 (Aug. 7, 1994) MEAN 12.86 LOW 17.01 (Jan. 1, 1994)

Figure 15.—Water level in observation well 11AA01, Spalding County.

314330084005403 Local number, 13M007.
LOCATION.—Lat 31°43′30″, long 84°00′54″, Hydrologic Unit 03130006.
SITE NAME.—U.S. Geological Survey, test well DP-9.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Surficial (residuum).
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 25 ft, cased to 10 ft, open hole.
DATUM.—Altitude of land-surface datum is 230 ft.
REMARKS.—None.
PERIOD OF RECORD.—April 1980 to current year. Continuous record since April 1980.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 3.48 ft below land-surface datum, March 7, 1984; lowest, 13.03 ft below land-surface datum, October 22, 1981.

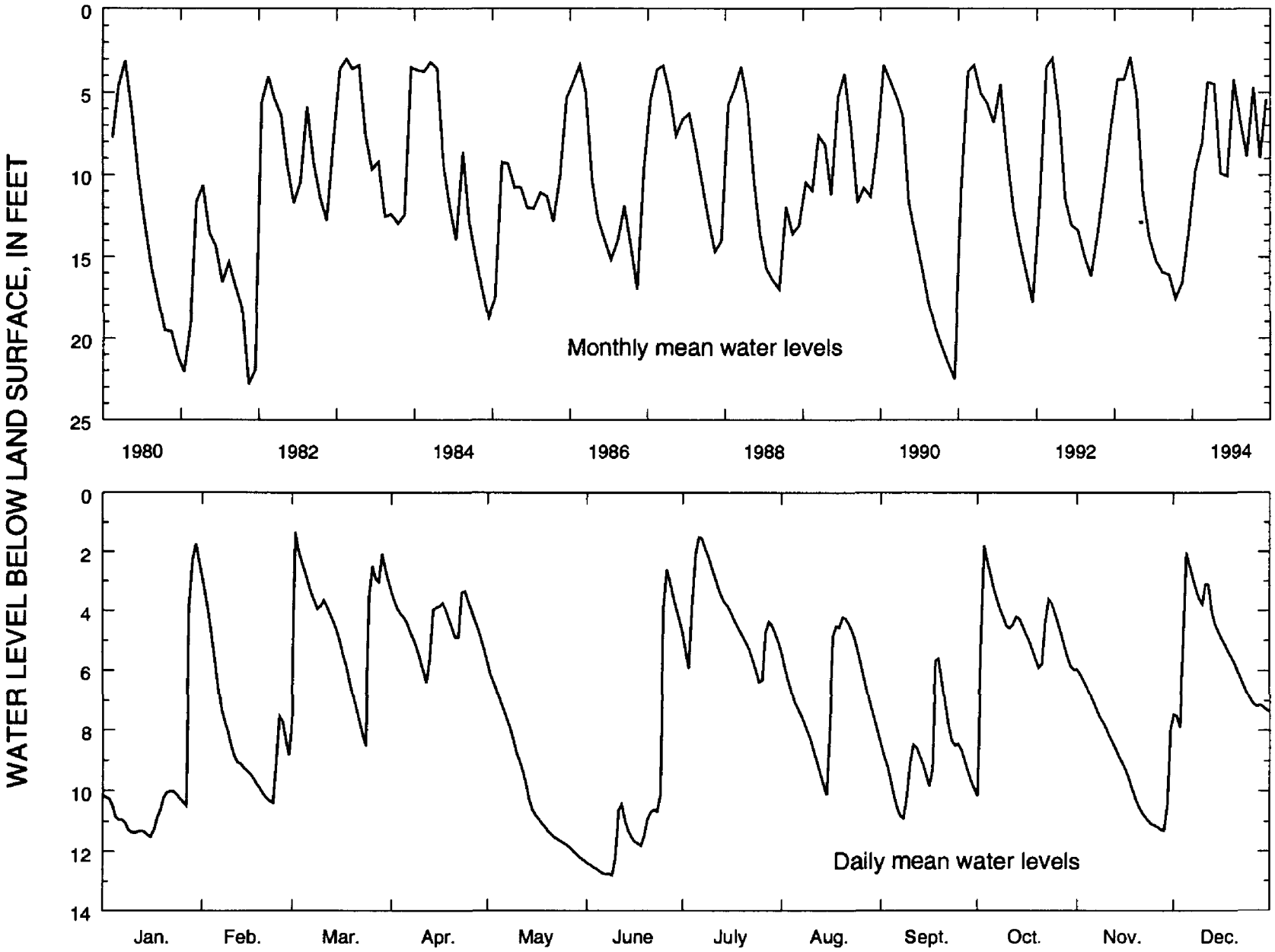


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	7.32	6.74	5.58	5.74	6.39	6.21	5.29	6.01	6.68	5.46	6.54	6.03
MEAN	8.21	6.85	5.95	6.00	6.96	6.76	5.94	6.35	6.98	6.04	7.02	6.25
LOW	8.41	7.08	6.80	6.35	7.59	7.75	7.10	6.67	7.26	7.29	7.48	6.63

SUMMARY FOR 1994 HIGH 5.29 (July 15, 1994) MEAN 6.61 LOW 8.41 (Jan. 16, 1994)

Figure 16.—Water level in observation well 13M007, Worth County.

311009084495503 Local number, 07H003.
LOCATION.—Lat 31°10′08″, long 84°49′54″, Hydrologic Unit 03130010.
SITE NAME.—U.S. Geological Survey, test well DP-3.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Surficial (residuum).
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 40 ft, perforated casing 30 to 40 ft.
DATUM.—Altitude of land-surface datum is 180 ft.
REMARKS.—None.
PERIOD OF RECORD.—February 1980 to current year. Continuous record since February 1980.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 0.25 ft below land-surface datum, January 30, 1991; lowest, 24.19 ft below land-surface datum, November 10, 1981.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	1.72	2.81	1.33	3.34	5.71	2.59	1.50	4.23	5.61	1.78	5.96	2.02
MEAN	9.69	8.04	4.35	4.46	9.87	10.04	4.16	6.75	8.87	4.65	8.95	5.40
LOW	11.50	10.38	8.51	6.41	12.29	12.79	6.39	10.12	10.89	10.15	11.30	7.88

SUMMARY FOR 1994 HIGH 1.33 (Mar. 2, 1994) MEAN 7.08 LOW 12.79 (June 9, 1994)

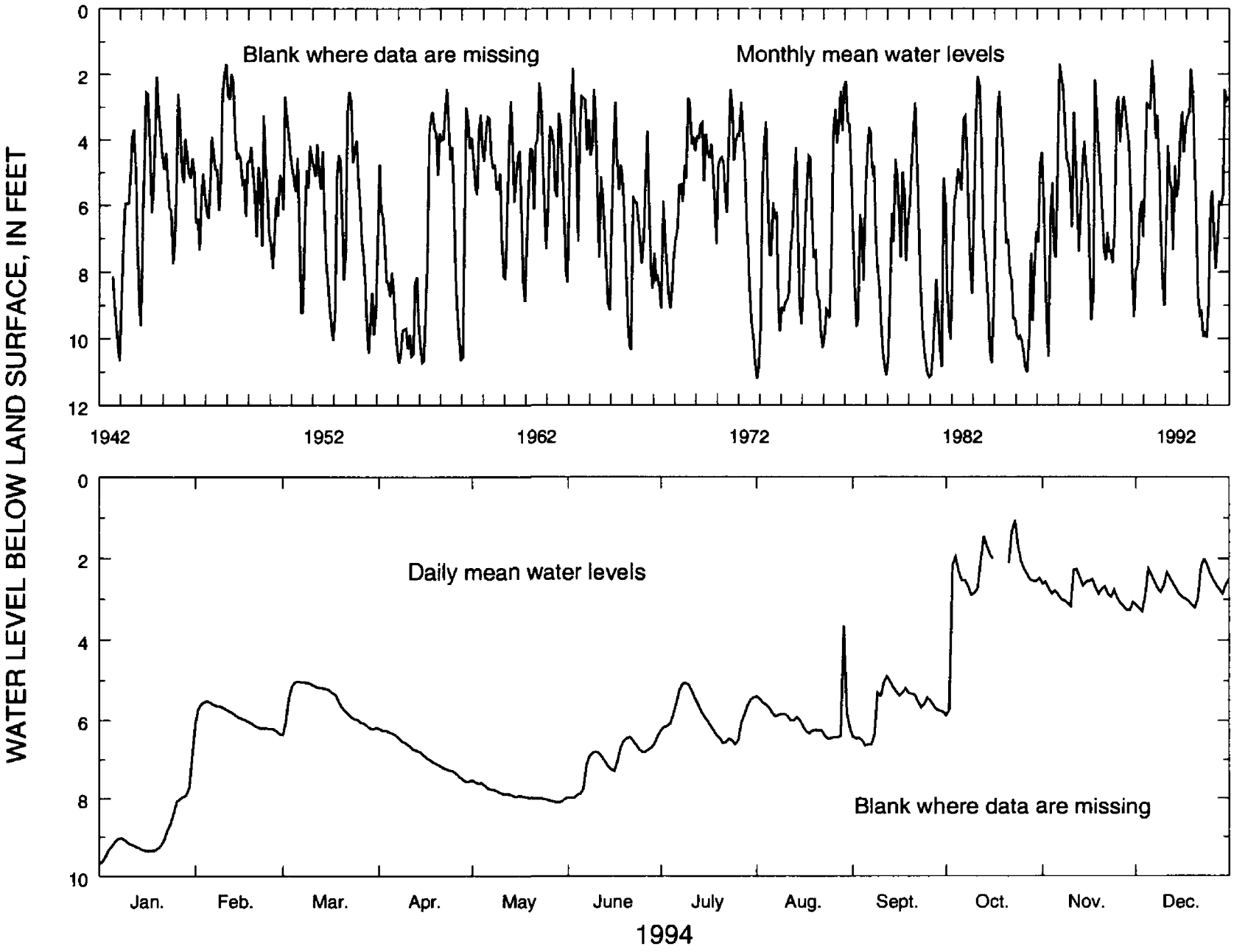
Figure 17.—Water level in observation well 07H003, Miller County.

Coastal area

Water levels in surficial aquifers in the coastal area were monitored in six wells in 1994 and data for five of the wells (fig. 14) are shown in figures 18-22. Water levels in surficial aquifers in the northern part of the coastal area are affected by variations in precipitation, evapotranspiration, and natural drainage (Clarke and others, 1990, p. 22). The annual mean water level in well 35P094 was 1.2 ft higher in 1994 than in 1993. In 1994, the annual mean water levels in wells 37P116 (fig. 19) and 32R003 (fig. 20) were the same and 1.3 ft higher than in 1993, respectively. A record-high daily mean water level was recorded in well 37P116 (fig. 19) that was 0.3 ft higher than the previous record high.

The water-level in the surficial aquifer in the Brunswick area is influenced by nearby pumping, precipitation, and tidal fluctuations (Clarke and others, 1990, p. 24). The annual mean water level in well 34H438 (fig. 21) in Glynn County was 0.5 ft higher in 1994 than in 1993, and a record-high daily mean water level was recorded that was 0.7 ft higher than the previous record high. In 1994, the annual mean water level in well 32L017 (fig. 22) in the Jesup, Wayne County, area was the same as in 1993.

315950081161201 Local number, 35P094.
LOCATION.—Lat 31°59′50″, long 81°16′12″, Hydrologic Unit 03060204.
SITE NAME.—University of Georgia, Bamboo Farm.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Surficial (sand of Holocene and Pleistocene age).
WELL CHARACTERISTICS.—Bored observation well, diameter 30 in., depth 15 ft, cased to 15 ft, open end.
DATUM.—Altitude of land-surface datum is 18.67 ft.
REMARKS.—Responds quickly to precipitation. Water levels for period, October 17-20, are missing.
PERIOD OF RECORD.—August 1942 to current year. Continuous record since August 1942.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 0.05 ft below land-surface datum, September 26, 1953; lowest, 12.28 ft below land-surface datum, November 30, 1972.

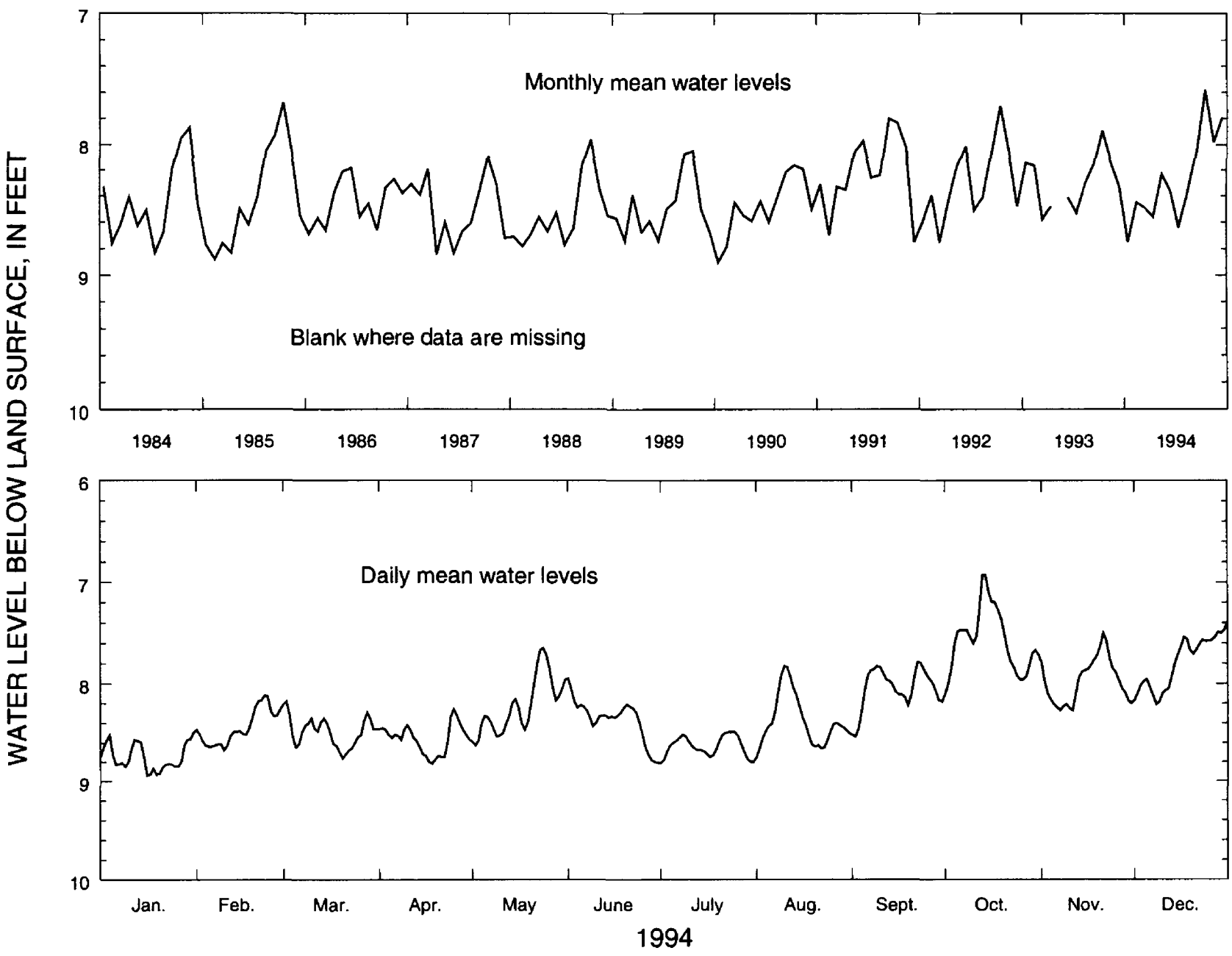


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	6.90	5.52	5.03	6.21	7.54	6.40	5.06	3.65	4.90	1.07	2.27	2.00
MEAN	8.92	5.92	5.57	6.89	7.90	7.03	5.92	5.96	5.69	2.46	2.81	2.70
LOW	9.68	6.35	6.37	7.57	8.10	8.00	6.61	6.47	6.64	5.88	3.25	3.29

SUMMARY FOR 1994 HIGH 1.07 (Oct. 23, 1994) MEAN 5.68 LOW 9.68 (Jan. 1, 1994)

Figure 18.—Water level in observation well 35P094, Chatham County.

315906081011204 Local number, 37P116.
LOCATION.—Lat 31°59′06″, long 81°01′12″, Hydrologic Unit 03060204.
SITE NAME.—Georgia Geologic Survey, Skidaway Institute, test well 4.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Surficial (sand of Miocene and post Miocene age).
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 85 ft, cased to 70 ft, screen to 85 ft.
DATUM.—Altitude of land-surface datum is 10 ft.
REMARKS.—None.
PERIOD OF RECORD.—January 1984 to current year. Continuous record since January 1984.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 6.93 ft below land-surface datum, October 13-14, 1994; lowest, 9.27 ft below land-surface datum, March 17, 1993.

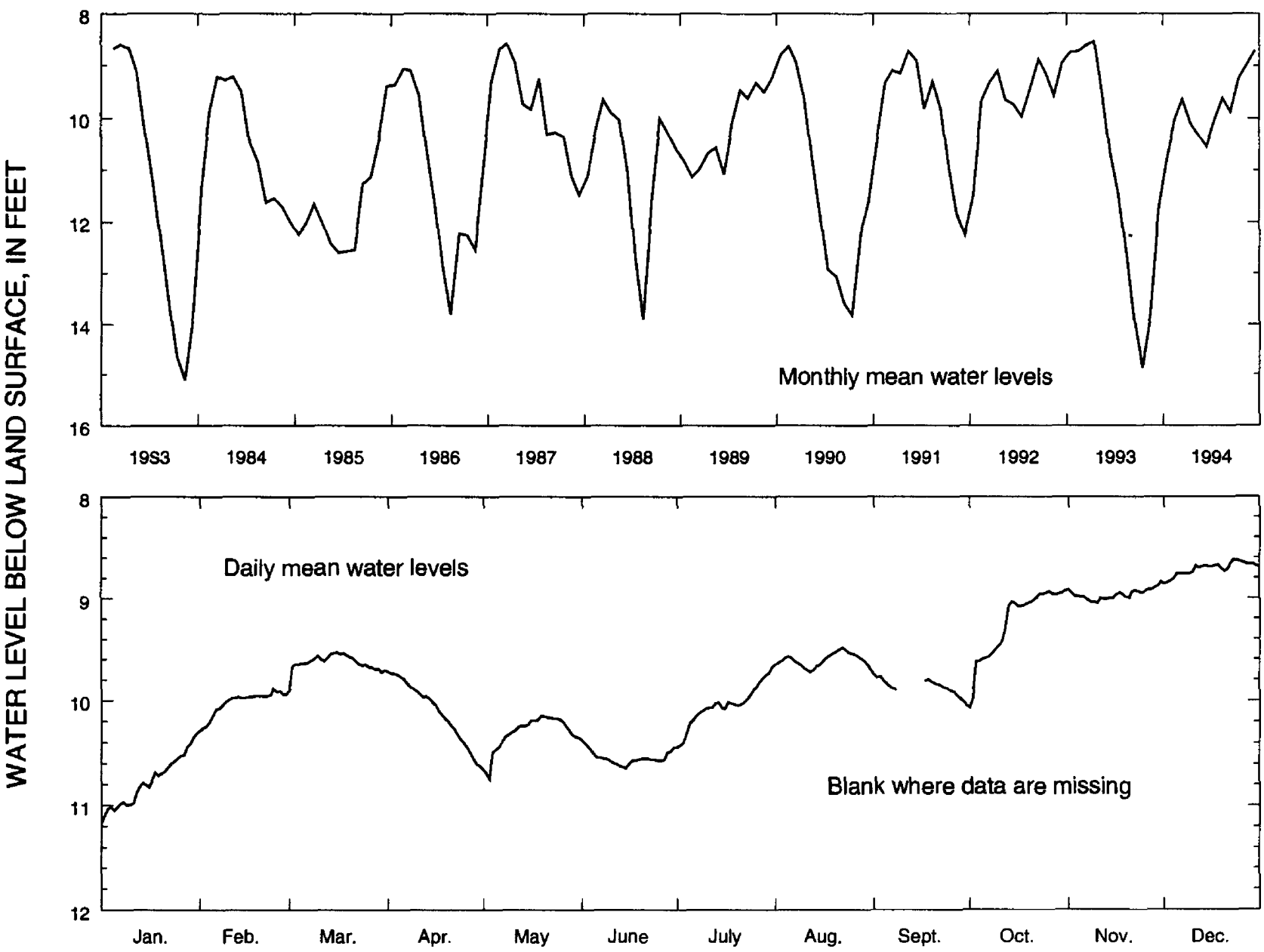


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	8.49	8.12	8.18	8.26	7.65	7.95	8.49	7.83	7.79	6.93	7.50	7.39
MEAN	8.75	8.45	8.49	8.56	8.23	8.36	8.64	8.38	8.05	7.58	7.98	7.79
LOW	8.94	8.68	8.76	8.82	8.63	8.81	8.81	8.75	8.54	8.10	8.27	8.21

SUMMARY FOR 1994 HIGH 6.93 (Oct. 13, 1994) MEAN 8.27 LOW 8.94 (Jan. 16, 1994)

Figure 19.—Water level in observation well 37P116, Chatham County.

321240081411502 Local number, 32R003.
LOCATION.—Lat 32°12′40″, long 81°41′15″, Hydrologic Unit 03060202.
SITE NAME.—Georgia Geologic Survey, Bulloch South, test well 2.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Surficial (sand of Miocene and post Miocene age).
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 155 ft, cased to 134 ft, screen to 155 ft.
DATUM.—Altitude of land-surface datum is 120 ft.
REMARKS.—Water levels for period, September 9-16, are missing.
PERIOD OF RECORD.—February 1983 to current year. Continuous record since February 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 8.28 ft below land-surface datum, March 6, 1993; lowest, 15.27 ft below land-surface datum, November 14, 1983.

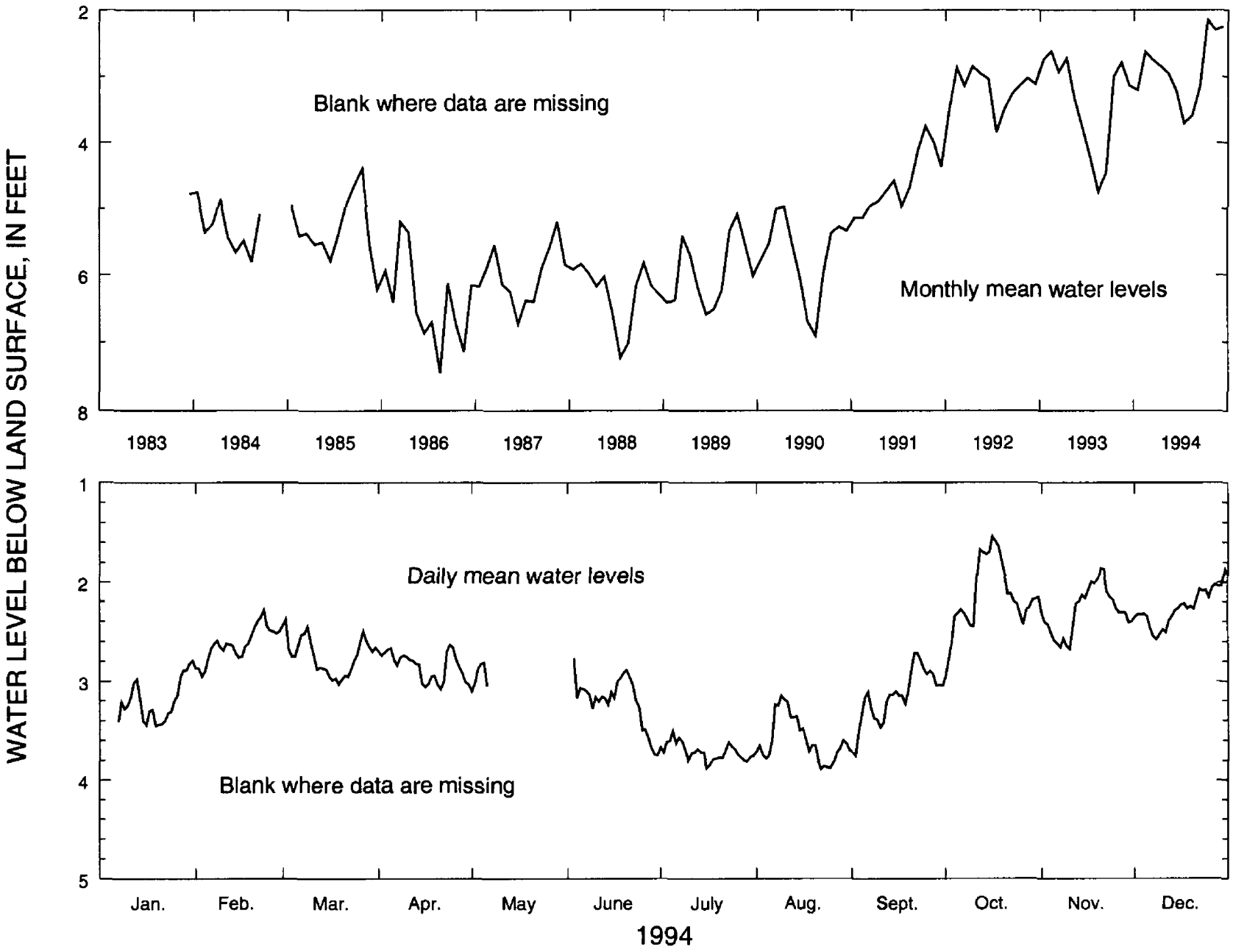


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	10.31	9.89	9.53	9.72	10.15	10.37	9.68	9.49	------	8.93	8.84	8.62
MEAN	10.77	10.02	9.63	10.09	10.31	10.54	10.05	9.61	------	9.24	8.97	8.71
LOW	11.17	10.29	9.90	10.62	10.74	10.64	10.44	9.73	------	10.07	9.05	8.86

SUMMARY FOR 1994 HIGH 8.62 (Dec. 23, 1994) MEAN 9.81 LOW 11.17 (Jan. 1, 1994)

Figure 20.—Water level in observation well 32R003, Bulloch County.

310901081284403 Local number, 34H438.
LOCATION.—Lat 31°09′01″, long 81°28′44″, Hydrologic Unit 03070203.
SITE NAME.—*Georgia Geologic Survey, Coffin Park, test well 3.*
INSTRUMENTATION.—Electronic data recorder.
AQUIFER.—Surficial (sand of Miocene and post Miocene age).
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 202 ft, cased to 192 ft, screen to 202 ft.
DATUM.—Altitude of land-surface datum is 7 ft.
REMARKS.—Water levels for periods, January 1-6 and May 7 to June 2, are missing.
PERIOD OF RECORD.—November 1983 to current year. Continuous record November 1983 to September 1984, and since January 1985.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 1.54 ft below land-surface datum, October 16, 1994; lowest, 8.13 ft below land-surface datum, July 12, 1990.

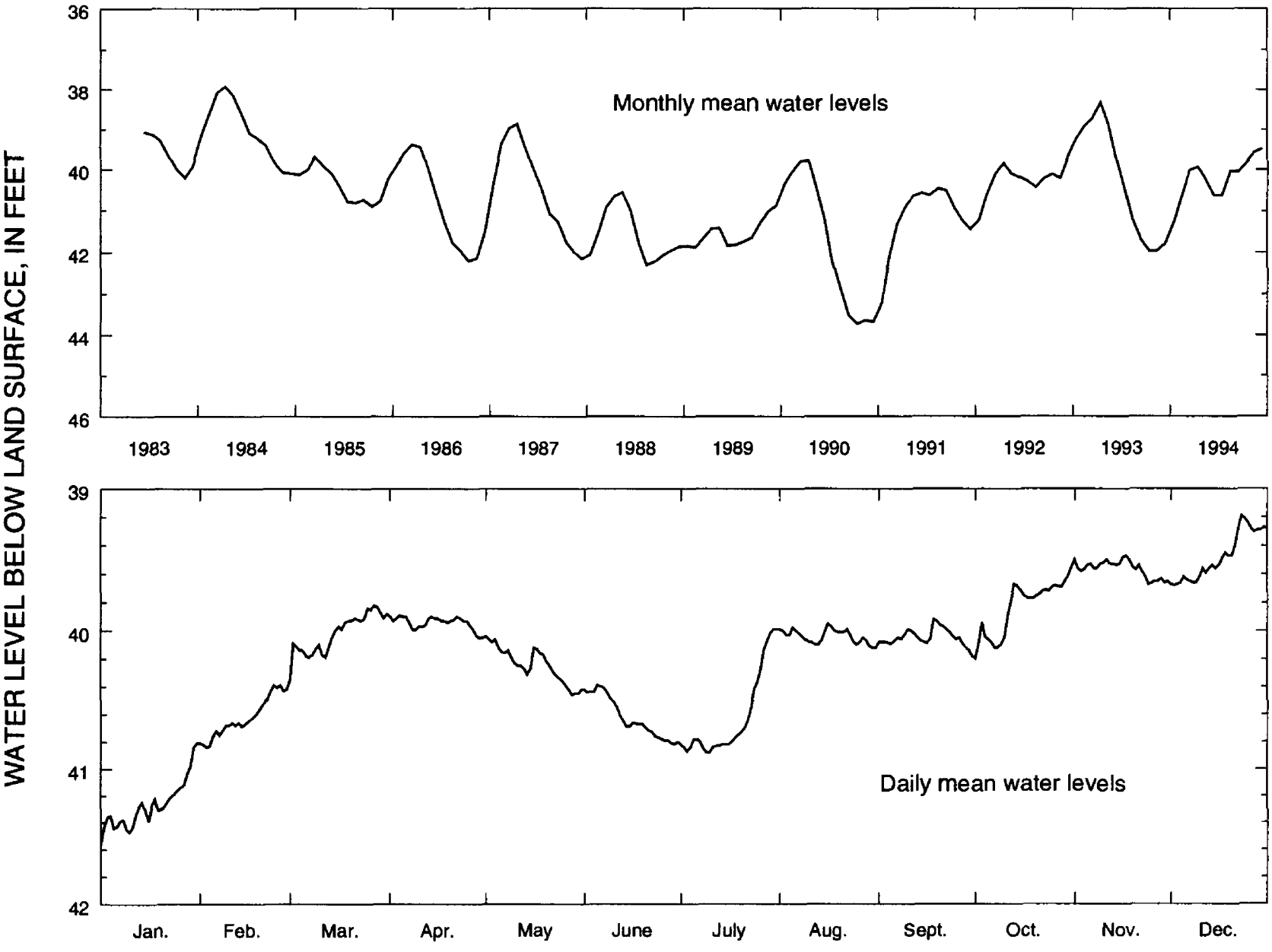


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	2.79	2.29	2.38	2.63	------	2.77	3.50	3.15	2.72	1.54	1.86	1.87
MEAN	3.20	2.62	2.74	2.84	------	3.21	3.71	3.59	3.15	2.15	2.29	2.25
LOW	3.45	2.95	3.03	3.08	------	3.75	3.88	3.89	3.75	2.95	2.68	2.58

SUMMARY FOR 1994 HIGH 1.54 (Oct. 16, 1994) MEAN 2.88 LOW 3.89 (Aug. 22, 1994)

Figure 21.—Water level in observation well 34H438, Glynn County.

313253081433504 Local number, 32L017.
LOCATION.—Lat 31°32′52″, long 81°43′36″, Hydrologic Unit 03070106.
SITE NAME.—Georgia Geologic Survey, Gardi, test well 3.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Surficial (sand of Miocene and post-Miocene age).
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 215 ft, cased to 200 ft, screen to 215 ft.
DATUM.—Altitude of land-surface datum is 74 ft.
REMARKS.—None.
PERIOD OF RECORD.—June 1983 to current year. Continuous record since June 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 37.85 ft below land-surface datum, April 16, 1984; lowest, 43.91 ft below land-surface datum, October 8, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	40.81	40.39	39.82	39.89	40.04	40.39	39.99	39.95	39.92	39.55	39.47	39.19
MEAN	41.27	40.62	40.02	39.94	40.24	40.62	40.63	40.04	40.05	39.83	39.57	39.48
LOW	41.56	40.84	40.35	40.05	40.46	40.82	40.88	40.12	40.18	40.20	39.67	39.68

SUMMARY FOR 1994 HIGH 39.19 (Dec. 23, 1994) MEAN 40.19 LOW 41.56 (Jan. 1, 1994)

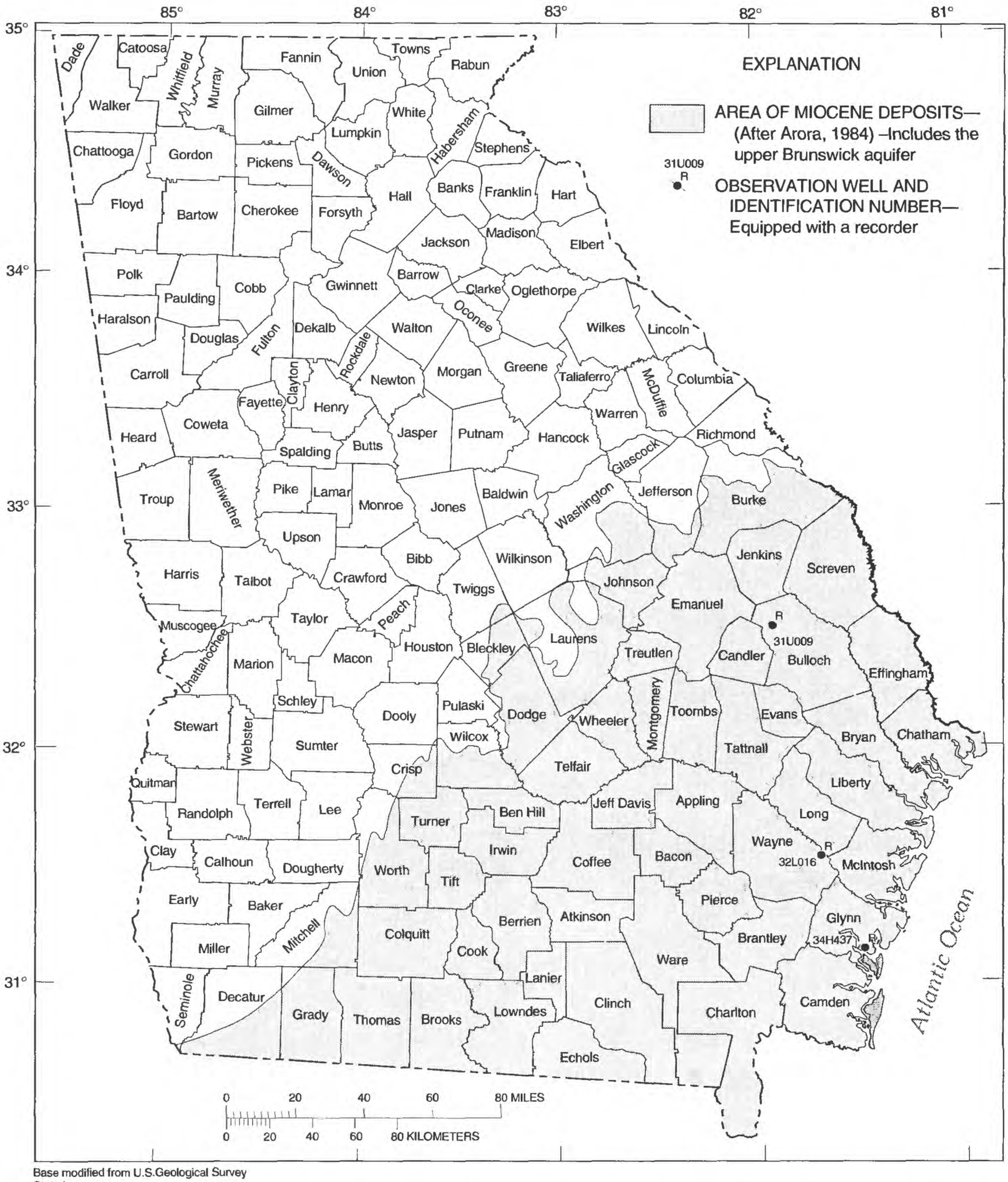
Figure 22.—Water level in observation well 32L017, Wayne County.

Upper Brunswick Aquifer

The water level in the upper Brunswick aquifer was monitored in five wells in 1994 and data for three of these wells (fig. 23) are summarized in this report. The upper Brunswick aquifer responds to pumping from the Upper Floridan aquifer as a result of the hydraulic connection between the aquifers (Clarke and others, 1990, p. 28). Elsewhere, the water level mainly responds to seasonal variations in recharge and discharge.

The upper Brunswick aquifer in Bulloch County is under unconfined to semiconfined conditions and is influenced by both variations in recharge from precipitation and by pumping from the Upper Floridan aquifer (Clarke and others, 1990, p. 28). The annual mean water level in well 31U009 (fig. 24) was about 2.3 ft lower in 1994 than in 1993.

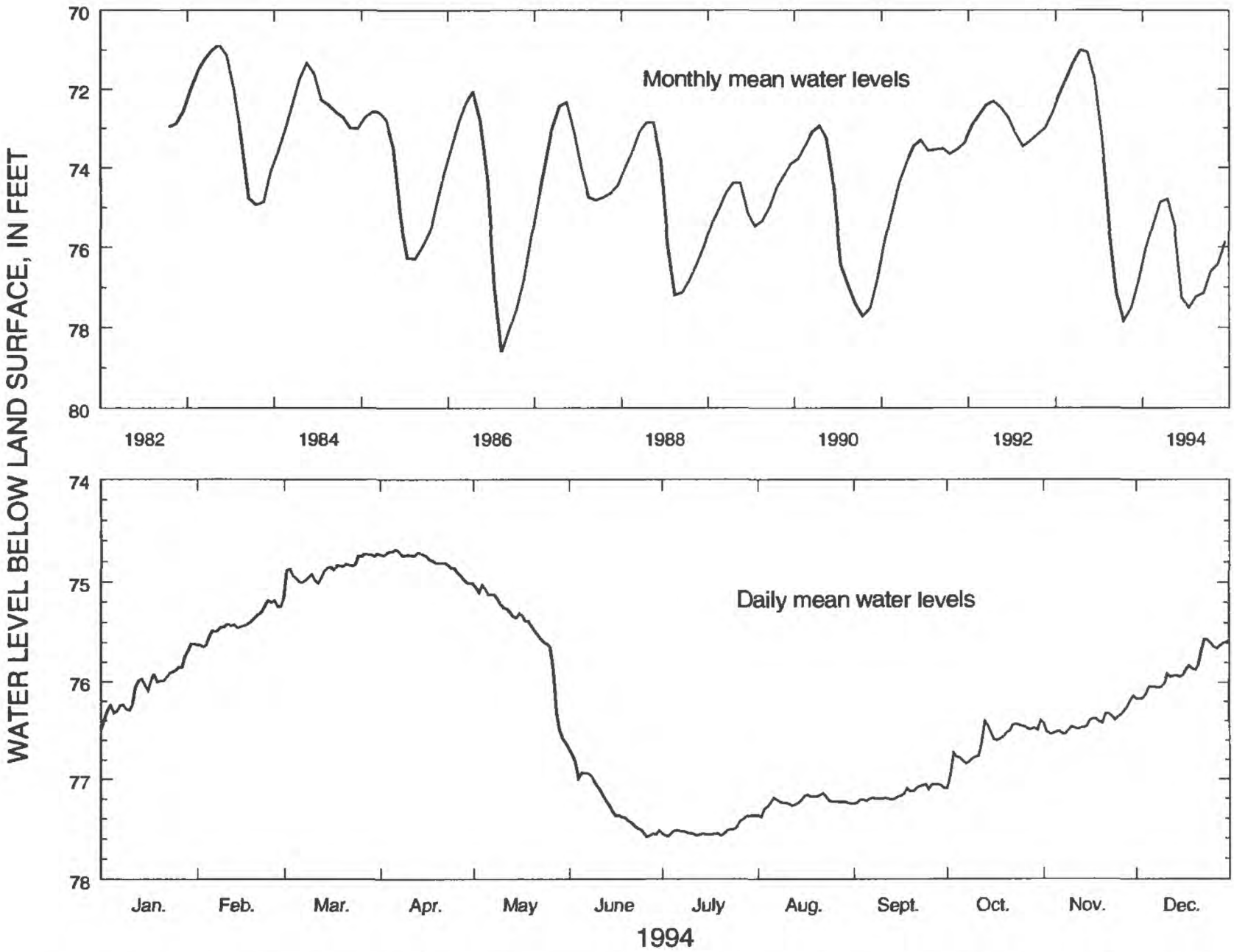
In the Wayne and Glynn County areas, the upper Brunswick aquifer is confined and responds to nearby pumping (Clarke and others, 1990, p. 28). In 1994, the annual mean water level in well 32L016 near Jesup (fig. 25) was 0.6 ft higher than in 1993. The annual mean water level in well 34H437 near Brunswick (fig. 26) was 0.8 ft higher in 1994 than in 1993.



Base modified from U.S.Geological Survey
State base map

Figure 23.—Locations of observation wells completed in the Upper Brunswick aquifer. (The extent of the upper Brunswick aquifer has not been mapped, but is within the area of Miocene deposits shown.)

323123081511602 Local number, 31U009.
LOCATION.—Lat 32°31′23″, long 81°51′16″, Hydrologic Unit 03060202.
SITE NAME.—Georgia Geologic Survey, Hopeulikit, test well 2.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Brunswick.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 210 ft, cased to 160 ft, screen to 210 ft.
DATUM.—Altitude of land-surface datum is 205 ft.
REMARKS.—None.
PERIOD OF RECORD.—October 1982 to current year. Continuous record since October 1982.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 70.77 ft below land-surface datum, April 24, 1983; lowest, 78.87 ft below land-surface datum, August 4, 1986.

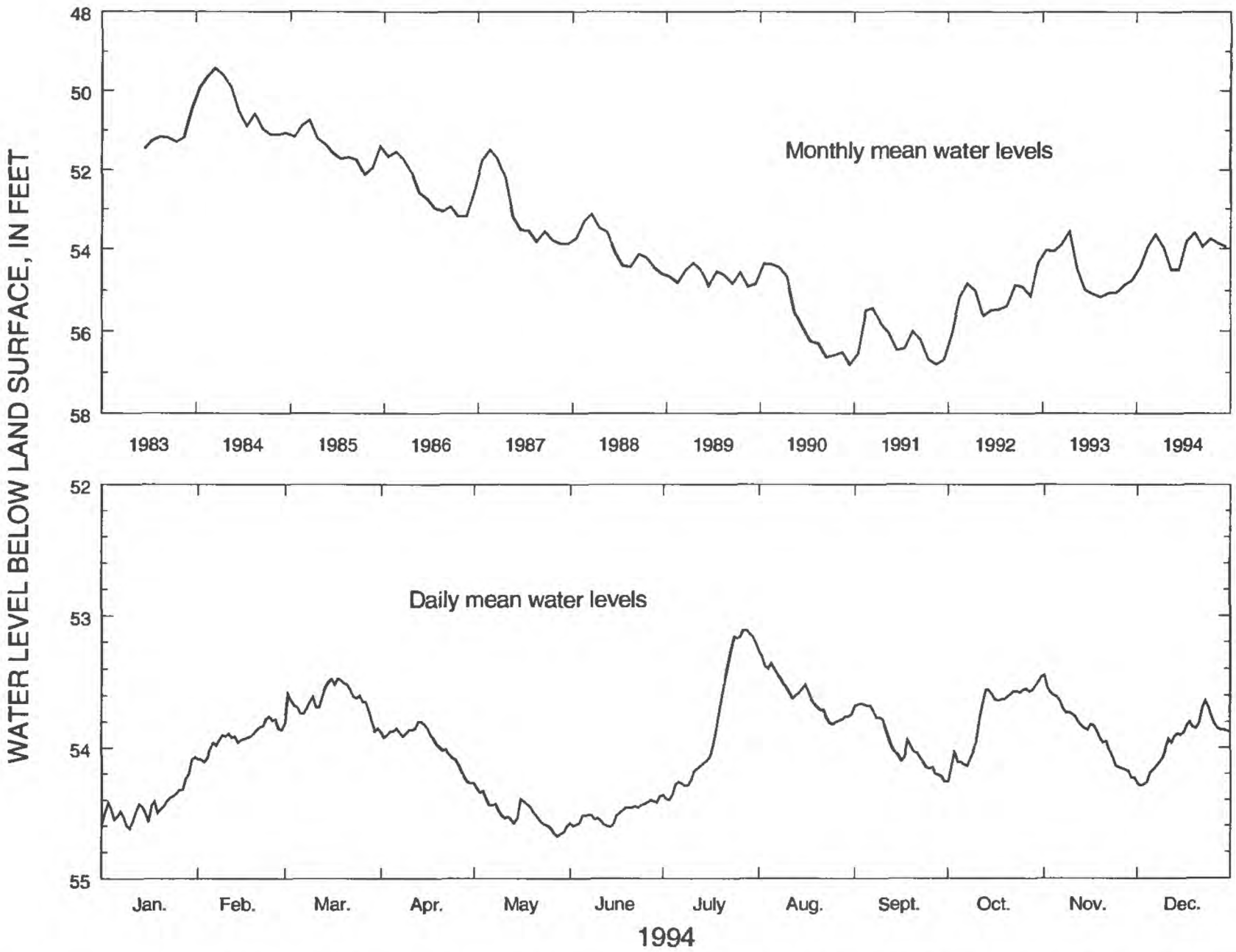


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	75.61	75.18	74.72	74.68	75.01	76.69	77.37	77.14	77.05	76.39	76.14	75.56
MEAN	76.04	75.40	74.87	74.79	75.47	77.25	77.51	77.23	77.15	76.61	76.41	75.86
LOW	76.48	75.64	75.15	75.01	76.63	77.58	77.58	77.38	77.25	77.09	76.53	76.17

SUMMARY FOR 1994 HIGH 74.68 (Apr. 6,·1994) MEAN 76.22 LOW 77.58 (June 26, 1994)

Figure 24.—Water level in observation well 31U009, Bullock County.

313253081433503, Local number, 32L016.
LOCATION.—Lat 31°32′52″, long 81°43′36″, Hydrologic Unit 03070106.
SITE NAME.—Georgia Geologic Survey, Gardi, test well 2.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Brunswick.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 340 ft, cased to 320 ft, screen to 340 ft.
DATUM.—Altitude of land-surface datum is 74 ft.
REMARKS.—None.
PERIOD OF RECORD.—June 1983 to current year. Continuous record since June 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 49.26 ft below land-surface datum, March 20, 1984; lowest, 56.93 ft below land-surface datum, January 9, 1991.

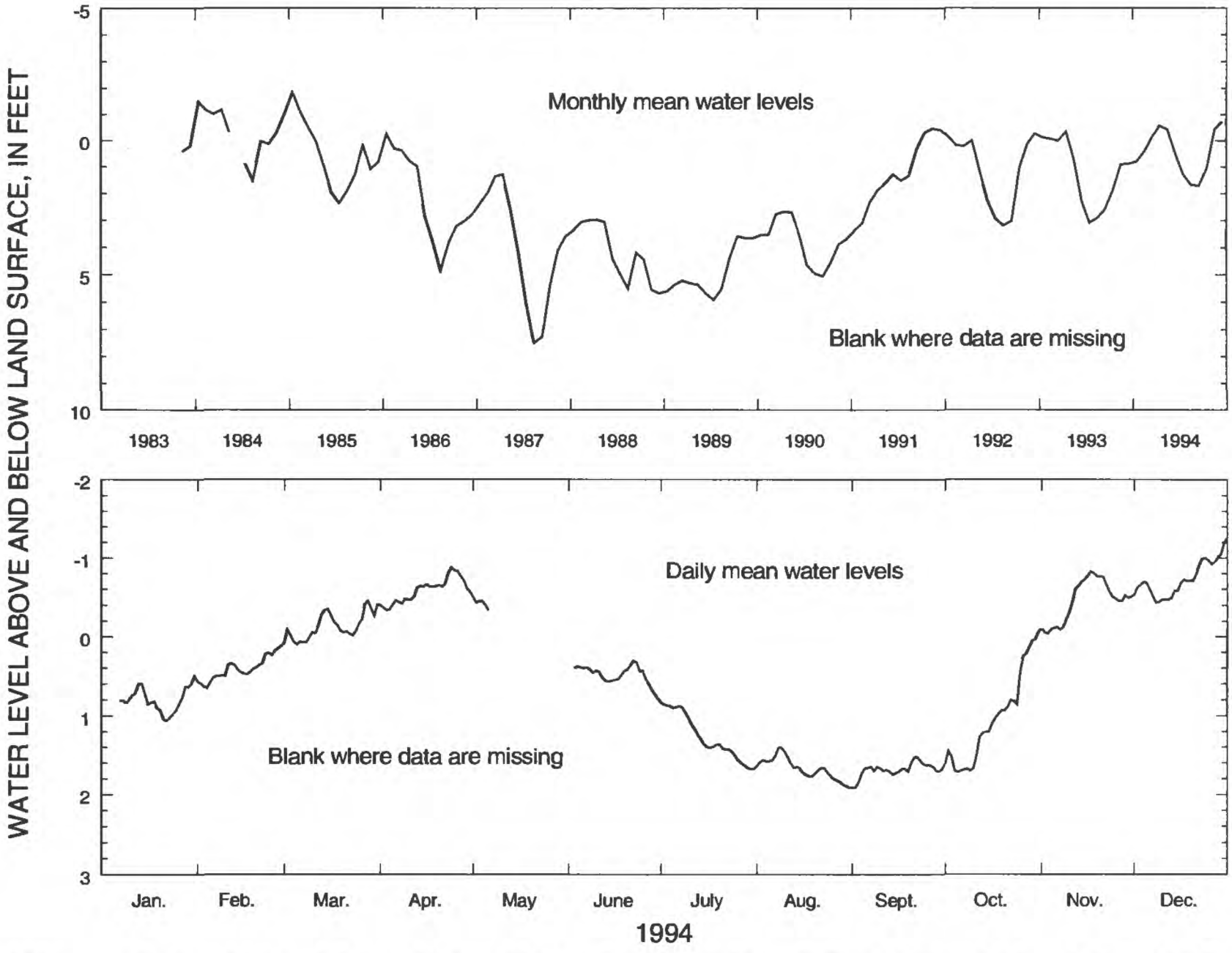


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	54.07	53.76	53.47	53.80	54.27	54.37	53.11	53.27	53.66	53.46	53.45	53.64
MEAN	54.43	53.92	53.64	53.96	54.50	54.50	53.82	53.60	53.95	53.75	53.87	53.95
LOW	54.62	54.11	53.87	54.27	54.68	54.61	54.40	53.82	54.26	54.26	54.23	54.29

SUMMARY FOR 1994 HIGH 53.11 (July 27, 1994) MEAN 53.99 LOW 54.68 (May 28, 1994)

Figure 25.—Water level in observation well 32L016, Wayne County.

310901081284402 Local number, 34H437.
LOCATION.—Lat 31°09′01″, long 81°28′44″, Hydrologic Unit 03070203.
SITE NAME.—Georgia Geologic Survey, Coffin Park, test well 2.
INSTRUMENTATION.—Electronic data recorder.
AQUIFER.—Upper Brunswick.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 328 ft, cased to 315 ft, screen to 328 ft.
DATUM.—Altitude of land-surface datum is 7 ft.
REMARKS.—Water levels for periods, January 1-6 and May 7 to June 2, are missing.
PERIOD OF RECORD.—November 1983 to current year. Continuous record since November 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 2.26 ft above land-surface datum, January 7, 1985; lowest, 7.80 ft below land-surface datum, August 30, 1987.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	0.50	0.12	-0.45	-0.88	------	0.31	0.83	1.41	1.53	-0.06	-0.82	-1.25
MEAN	0.80	0.41	-0.13	-0.58	------	0.48	1.26	1.67	1.69	1.04	-0.45	-0.73
LOW	1.06	0.65	0.10	-0.34	------	0.78	1.68	1.91	1.91	1.72	-0.04	-0.43

SUMMARY FOR 1994 HIGH -1.25 (Dec. 31, 1994) MEAN 0.48 LOW 1.91 (Aug. 31, 1994)

[Negative value indicates water level above land surface]

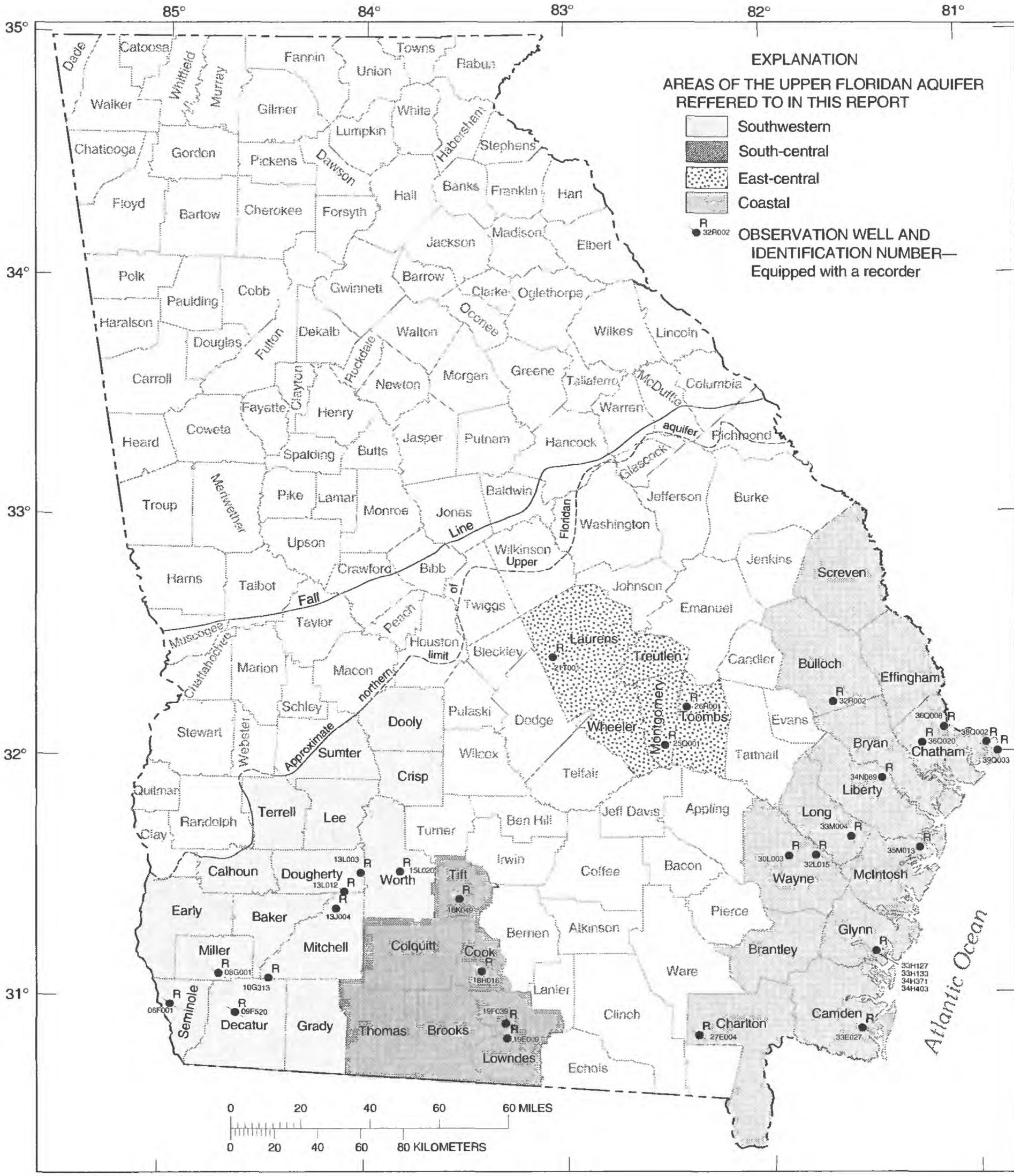
Figure 26.—Water level in observation well 34H437, Glynn County.

Floridan Aquifer System

Water levels in the Floridan aquifer system are monitored in 75 wells; data for 33 of these wells are summarized in this report (figs. 27 and 60). The Floridan aquifer system includes the Upper and Lower Floridan aquifers (table 2). In and near outcrop areas, the Upper Floridan aquifer is semiconfined, and water levels in wells tapping the aquifer fluctuate seasonally in response to variations in recharge rate and pumping (Clarke and others, 1990). Near the coast, where the Upper Floridan aquifer is confined, water levels respond primarily to pumping, and fluctuations related to recharge are less pronounced (Clarke and others, 1990, p. 31). Most of the water withdrawn from the Floridan aquifer system is from the Upper Floridan aquifer; a few wells in the Savannah area withdraw water from the Lower Floridan aquifer.

Upper Floridan aquifer

The water level in the Upper Floridan aquifer is monitored in 70 wells and data for 31 of these wells are summarized in this report (fig. 27). For this report, the Upper Floridan aquifer is divided into four areas: (1) the southwestern area; (2) the south-central area; (3) the east-central area; and (4) the coastal area (fig. 27). These areas were divided on the basis of similar hydrologic settings.



Base modified from U.S.Geological Survey
State base map

Figure 27.—*Subareas and locations of observation wells completed in the Upper Floridan aquifer.*

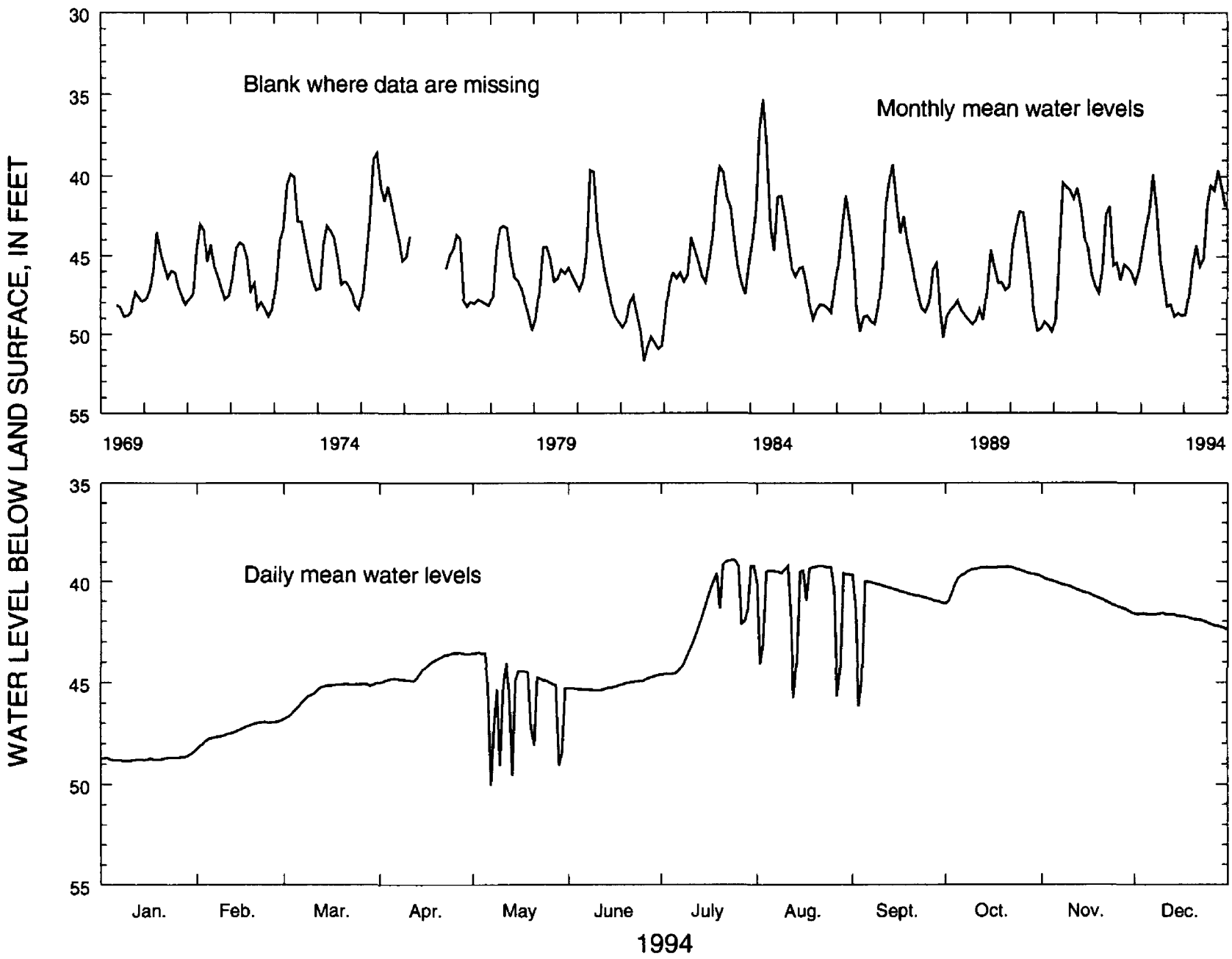
Southwestern area

The water level in the Upper Floridan aquifer in southwestern Georgia was monitored in 24 wells in 1994; data for eight of these wells (fig. 27) are summarized in figures 28-35. In the southwestern area, water levels in wells tapping the Upper Floridan aquifer respond to variations in precipitation, evapotranspiration, pumping, and streamflow (Hayes and others, 1983). The water level in the Upper Floridan aquifer responded in varying magnitudes and rates during the flooding associated with Tropical Storm Alberto, depending on the hydraulic properties of the aquifer in the area and the distance from the flooded area (Hicks, 1995).

The annual mean water levels in wells 09F520 (fig. 28), 08G001 (fig. 29), 06F001 (fig. 30), and 13L012 (fig. 31) tapping the Upper Floridan aquifer ranged from 1.8 to 7.6 ft higher in 1994 than in 1993. These four wells are near the Flint River or its tributaries where the aquifer is hydraulically connected to the streams.

In areas away from the Flint River and its tributaries, the Upper Floridan aquifer is confined by thicker overburden, is not well connected to streams, and the water level is not directly influenced by precipitation (Torak and others, 1991). Water-level fluctuations and trends in these areas are indicated by the hydrographs for wells 10G313 (fig. 32), 13L003 (fig. 33), 13J004 (fig. 34), and 15L020 (fig. 35). The annual mean water levels in these wells ranged from 0.1 to 2.6 ft higher in 1994 than in 1993. A record-high daily mean water level was recorded in well 13J004 (fig. 34) that was 0.9 ft higher than the previous record high.

305736084355801 Local number, 09F520.
LOCATION.—Lat 30°57′42″, long 84°35′46″, Hydrologic Unit 03130008.
SITE NAME.—Graham Bolton.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Unused irrigation well, diameter 12 in., depth 251 ft, cased to 130 ft, open hole.
DATUM.—Altitude of land-surface datum is 128 ft.
REMARKS.—This well is about 15 ft from an irrigation well.
PERIOD OF RECORD.—May 1969 to current year. Continuous record since May 1969.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 34.86 ft below land-surface datum, April 15, 1984; lowest, 54.89 ft below land-surface datum, September 22, 1990.

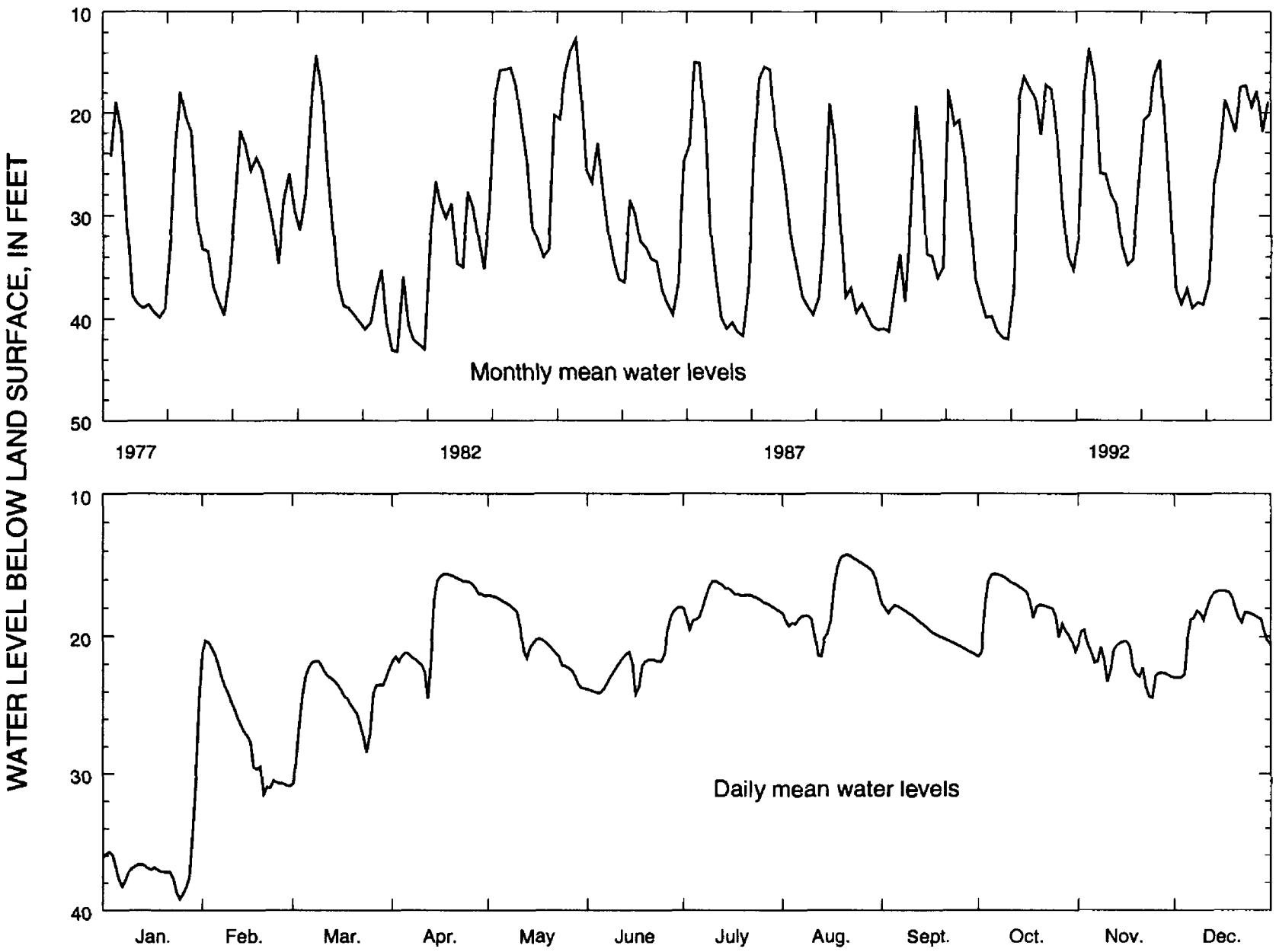


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	48.40	46.89	45.05	43.56	43.53	44.66	38.91	39.20	39.68	39.25	39.76	41.59
MEAN	48.73	47.39	45.50	44.29	45.63	45.14	41.78	40.57	40.87	39.60	40.63	41.85
LOW	48.85	48.25	46.81	45.02	50.05	45.39	44.64	45.75	46.16	41.12	41.57	42.40

SUMMARY FOR 1994 HIGH 38.91 (July 24, 1994) MEAN 43.47 LOW 50.05 (May 7, 1994)

Figure 28.—Water level in observation well 09F520, Decatur County.

310651084404501 Local number, 08G001.
LOCATION.—Lat 31°06′51″, long 84°40′45″, Hydrologic Unit 03130010.
SITE NAME.—Viercocken.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused irrigation well, diameter 12 in., depth 255 ft, cased to 130 ft, open hole.
DATUM.—Altitude of land-surface datum is 150 ft.
REMARKS.—None.
PERIOD OF RECORD.—February 1977 to current year. Continuous record since February 1977.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 11.18 ft below land-surface datum, April 11, 1984; lowest, 43.88 ft below land-surface datum, July 17, 1981.

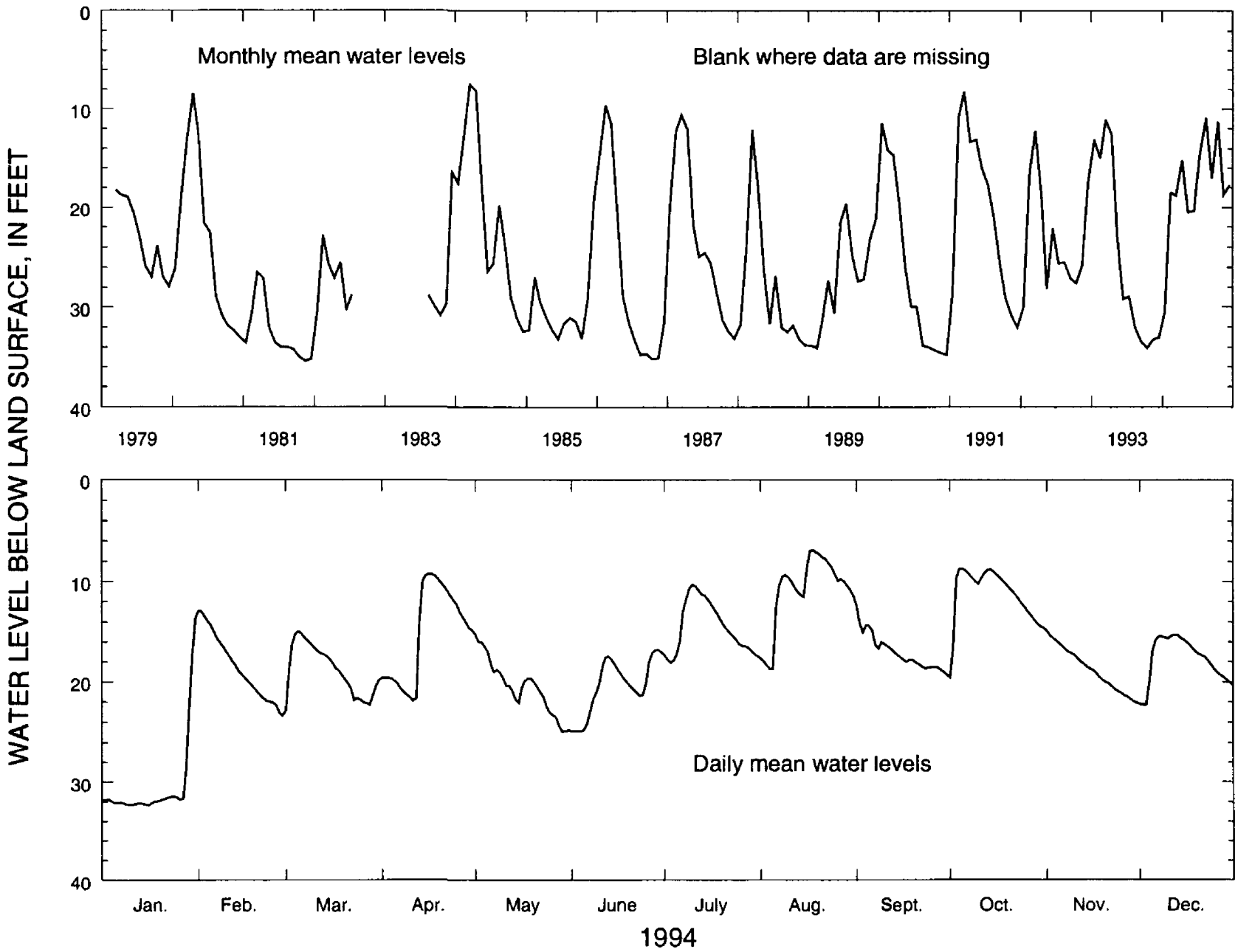


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	24.44	20.32	21.80	15.61	17.12	17.96	16.08	14.27	17.68	15.58	19.54	16.73
MEAN	36.47	26.69	24.41	18.70	20.24	21.90	17.44	17.28	19.42	17.81	21.87	18.87
LOW	39.21	31.49	30.75	24.50	23.78	24.19	19.53	21.46	21.35	21.46	24.41	22.98

SUMMARY FOR 1994 HIGH 14.27 (Aug. 21, 1994) MEAN 21.73 LOW 39.21 (Jan. 25, 1994)

Figure 29.—Water level in observation well 08G001, Miller County.

305356084534601 Local number, 06F001.
LOCATION.—Lat 30°54′01″ , long 84°53′40″ , Hydrologic Unit 03130004.
SITE NAME.—Roddenbery Company Farms, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 150 ft, cased to 98.5 ft, open hole.
DATUM.—Altitude of land-surface datum is 110 ft.
REMARKS.—None.
PERIOD OF RECORD.—March 1979 to July 1982, August 1983 to current year. Continuous record March 1979 to July 1982, and since August 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 4.13 ft below land-surface datum, March 8, 1984; lowest, 35.65 ft below land-surface datum, October 5, 1986.

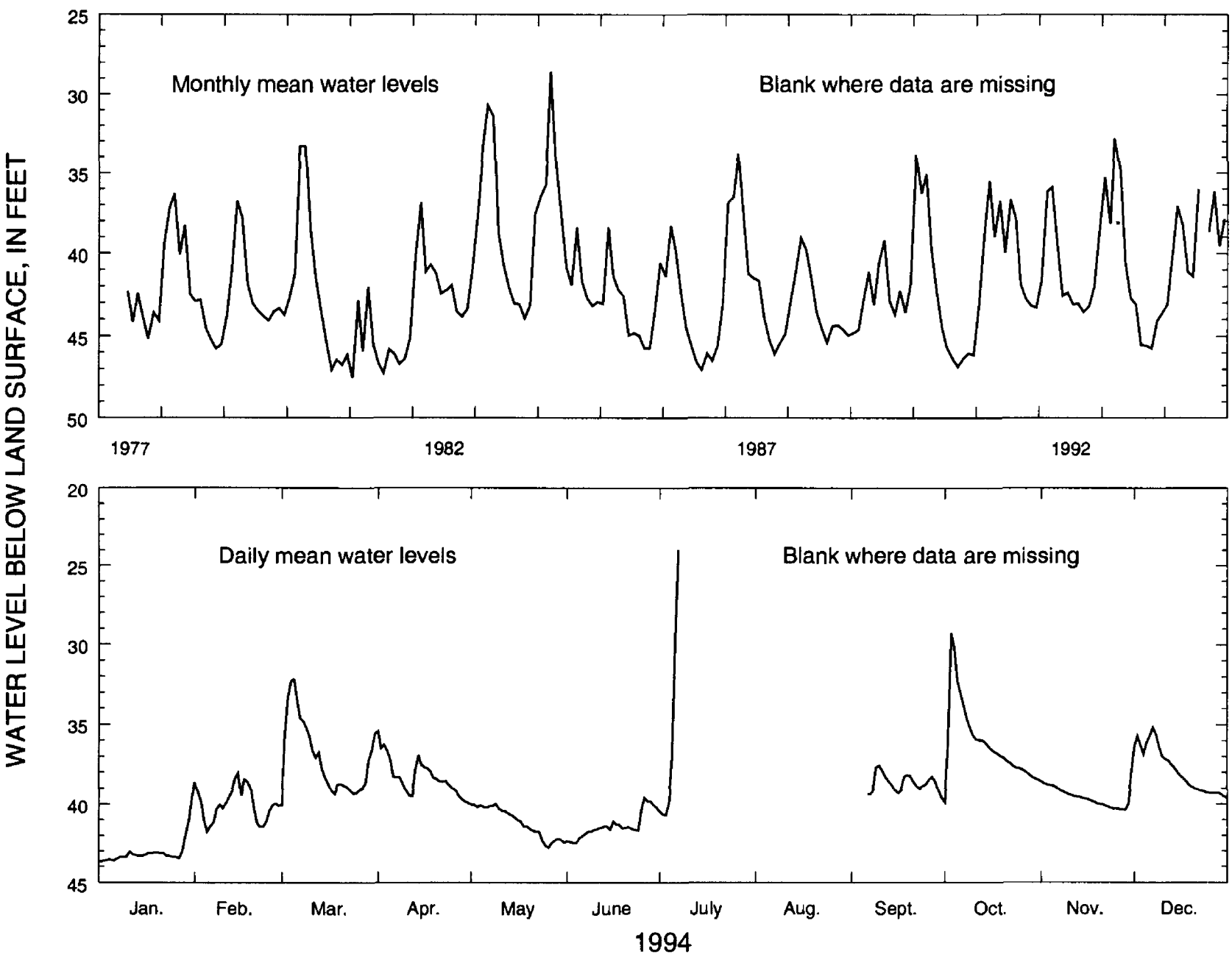


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	13.61	12.90	14.94	9.26	15.26	16.77	10.34	6.88	12.37	8.67	14.90	15.30
MEAN	30.48	18.53	18.82	15.18	20.48	20.39	14.50	10.89	17.05	11.25	18.77	17.76
LOW	32.34	23.35	22.85	21.90	24.91	24.85	18.08	18.71	19.29	19.53	22.10	22.29

SUMMARY FOR 1994 HIGH 6.88 (Aug. 18, 1994) MEAN 17.84 LOW 32.34 (Jan. 16, 1994)

Figure 30.—Water level in observation well 06F001, Seminole County.

313105084064302 Local number, 13L012.
LOCATION.—Lat 31°31′05″, long 84°06′43″, Hydrologic Unit 03130008.
SITE NAME.—U.S. Geological Survey, test well 3.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 218 ft, cased to 54 ft, open hole.
DATUM.—Altitude of land-surface datum is 195 ft.
REMARKS.—Water levels for period, July 8 to September 5, are missing.
PERIOD OF RECORD.—June 1977 to current year. Continuous record since June 1977.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 21.92 ft below land-surface datum, March 2, 1979; lowest, 48.18 ft below land-surface datum, July 1, 1981.

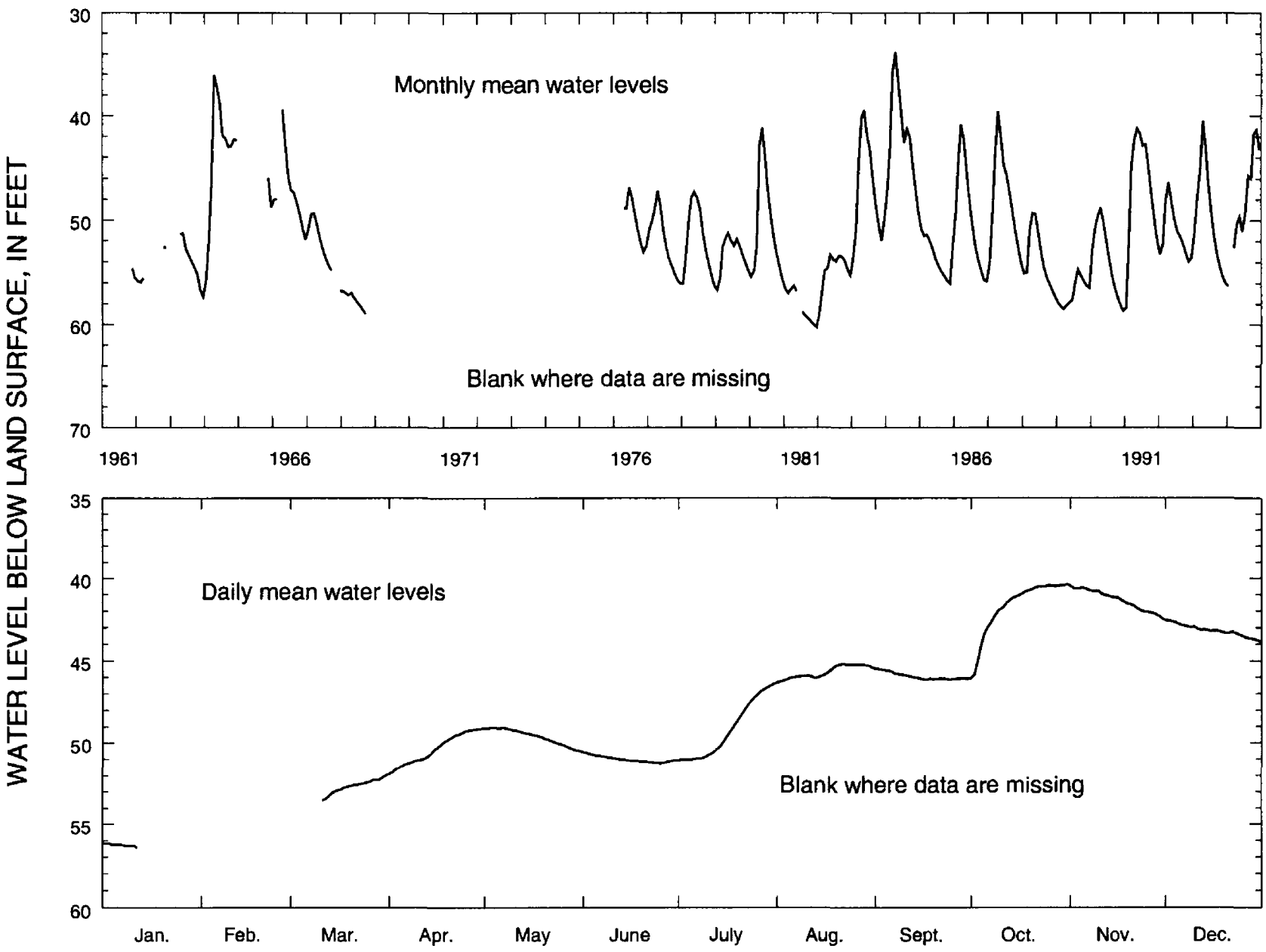


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	39.50	38.05	32.12	35.40	39.99	39.55	------	------	37.56	29.25	38.14	35.17
MEAN	43.10	40.00	37.08	38.23	41.13	41.37	------	------	38.66	36.16	39.55	37.86
LOW	43.68	41.76	40.04	39.90	42.77	42.47	------	------	39.63	39.86	40.37	39.62

SUMMARY FOR 1994 HIGH 23.95 (July 7, 1994) MEAN 39.24 LOW 43.68 (Jan. 1, 1994)

Figure 31.—Water level in observation well 13L012, Dougherty County.

310507084262201 Local number, 10G313.
LOCATION.—Lat 31°05′07″, long 84°26′22″, Hydrologic Unit 03130008.
SITE NAME.—Harvey Meinders.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Cable-tool, observation well, diameter 12 in., depth 250 ft, cased to 87 ft, open hole.
DATUM.—Altitude of land-surface datum is 145 ft.
REMARKS.—Water levels for period, January 13 to March 10, are missing.
PERIOD OF RECORD.—November 1961 to September 1968, April 1976 to current year. Continuous record November 1961 to September 1968, and since April 1976.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 32.98 ft below land-surface datum, April 9, 1984; lowest, 60.26 ft below land-surface datum, January 1, 1982.

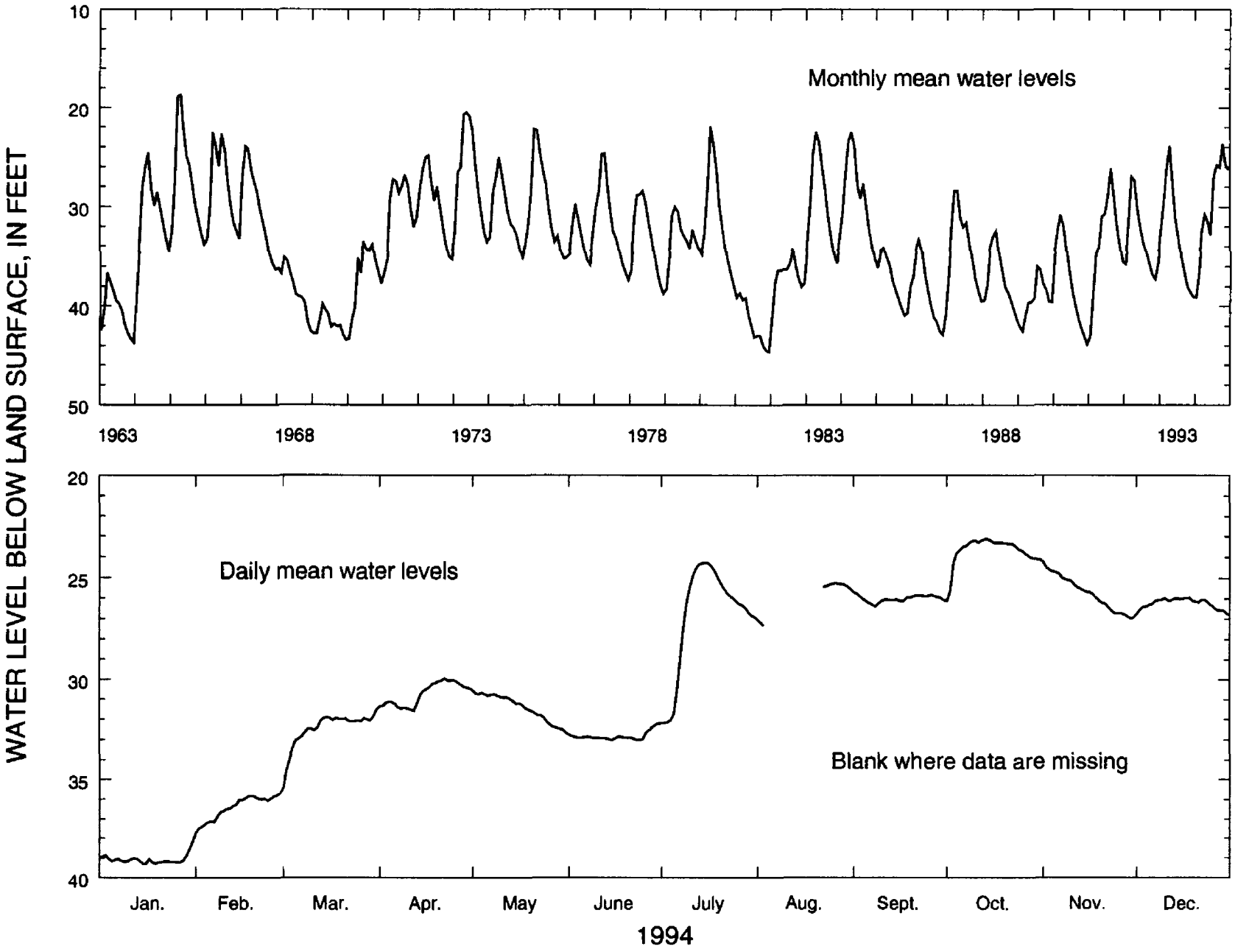


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	------	------	------	49.09	49.04	50.56	46.40	45.22	45.50	40.38	40.46	42.56
MEAN	------	------	------	50.37	49.60	51.01	49.21	45.69	45.95	41.71	41.34	43.19
LOW	------	------	------	51.91	50.51	51.25	51.06	46.31	46.16	46.06	42.48	43.86

SUMMARY FOR 1994 HIGH 40.38 (Oct. 31, 1994) MEAN 47.25 LOW 56.46 (Jan. 12, 1994)

Figure 32.—Water level in observation well 10G313, Mitchell County.

313748084002901 Local number, 13L003.
LOCATION.—Lat 31°33′13″, long 84°00′21″, Hydrologic Unit 03130008.
SITE NAME.—City of Albany and Dougherty County.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 6 in., depth 259 ft, cased to 206 ft, open hole.
DATUM.—Altitude of land-surface datum is 225 ft.
REMARKS.—Water levels for period, August 4-21, are missing.
PERIOD OF RECORD.—January 1963 to current year. Continuous record since January 1963.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 17.41 ft below land-surface datum, April 2, 1965; lowest, 44.89 ft below land-surface datum, December 13, 1981.

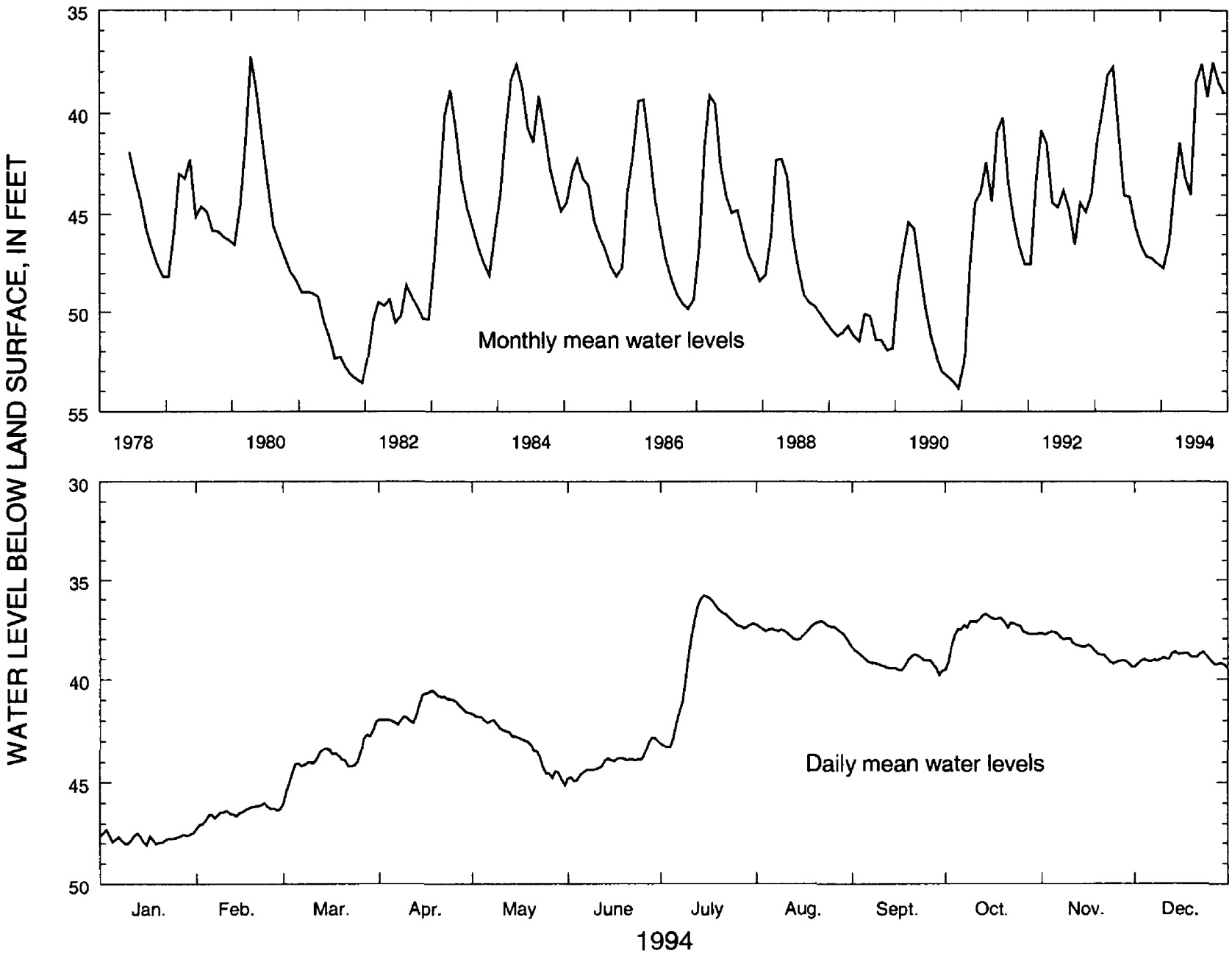


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	38.15	35.71	31.50	29.97	30.54	32.20	24.26	------	25.69	23.13	24.26	25.94
MEAN	39.09	36.42	32.47	30.73	31.40	32.83	26.88	------	26.00	23.69	25.74	26.23
LOW	39.30	37.74	35.45	31.56	32.64	33.04	32.19	------	26.38	26.11	26.96	26.79

SUMMARY FOR 1994 HIGH 23.13 (Oct. 14, 1994) MEAN 29.93 LOW 39.30 (Jan. 16, 1994)

Figure 33.—Water level in observation well 13L003, Dougherty County.

312127084065801 Local number, 13J004.
LOCATION.—Lat 31°21′29″, long 84°06′57″, Hydrologic Unit 03130008.
SITE NAME.—Aurora Dairy.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 12 in., depth 208 ft, cased to 77 ft, open hole.
DATUM.—Altitude of land-surface datum is 200 ft.
REMARKS.—None.
PERIOD OF RECORD.—June 1978 to current year. Continuous record since June 1978.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 35.80 ft below land-surface datum, July 15,1994; lowest, 54.05 ft below land-surface datum, December 25, 1990.

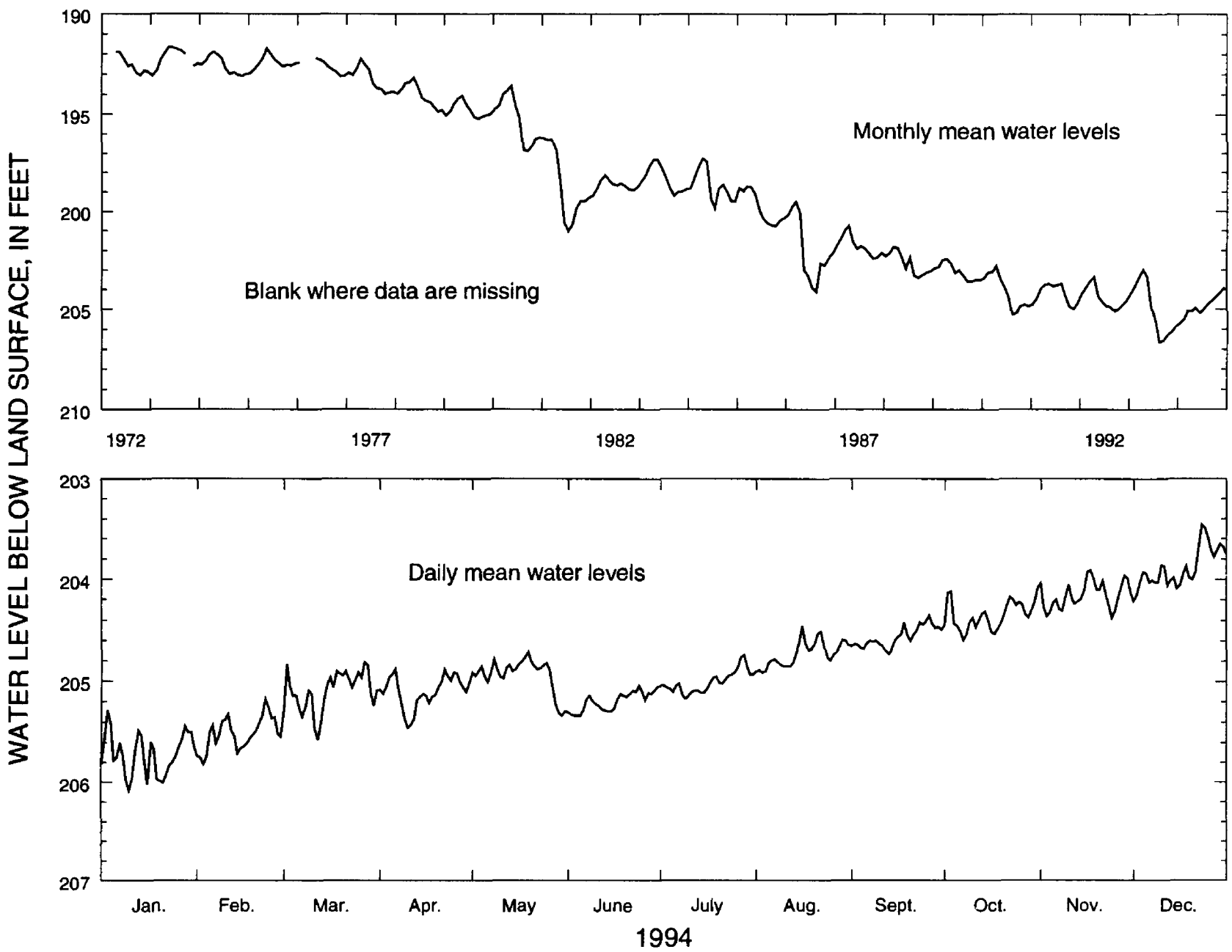


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	47.31	46.00	42.06	40.55	41.67	42.85	35.80	37.11	38.43	36.77	37.65	38.67
MEAN	47.73	46.48	43.82	41.43	43.09	44.01	38.47	37.60	39.20	37.49	38.48	39.02
LOW	48.07	47.27	46.04	42.23	45.14	44.94	43.29	38.23	39.81	39.57	39.41	39.46

SUMMARY FOR 1994 HIGH 35.80 (July 15, 1994) MEAN 41.37 LOW 48.07 (Jan. 16, 1994)

Figure 34.—Water level in observation well 13J004, Mitchell County.

313146083491601 Local number, 15L020.
LOCATION.—Lat 31°31′46″, long 83°49′16″, Hydrologic Unit 03110204.
SITE NAME.—City of Sylvester.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused municipal well, diameter 18 in., depth 450 ft, cased to 212 ft, open hole.
DATUM.—Altitude of land-surface datum is 420 ft.
REMARKS.—None.
PERIOD OF RECORD.—April 1972 to current year. Continuous record since April 1972.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 191.5 ft below land-surface datum, May 17, 1973; lowest, 207.07 ft below land-surface datum, August 27, 1993.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	205.28	205.17	204.81	204.88	204.71	205.04	204.74	204.45	204.35	204.08	203.91	203.46
MEAN	205.72	205.51	205.09	205.10	204.93	205.19	205.00	204.73	204.56	204.35	204.15	203.89
LOW	206.08	205.82	205.57	205.45	205.33	205.33	205.17	204.91	204.73	204.59	204.37	204.21

SUMMARY FOR 1994 HIGH 203.46 (Dec. 23, 1994) MEAN 204.84 LOW 206.08 (Jan. 10, 1994)

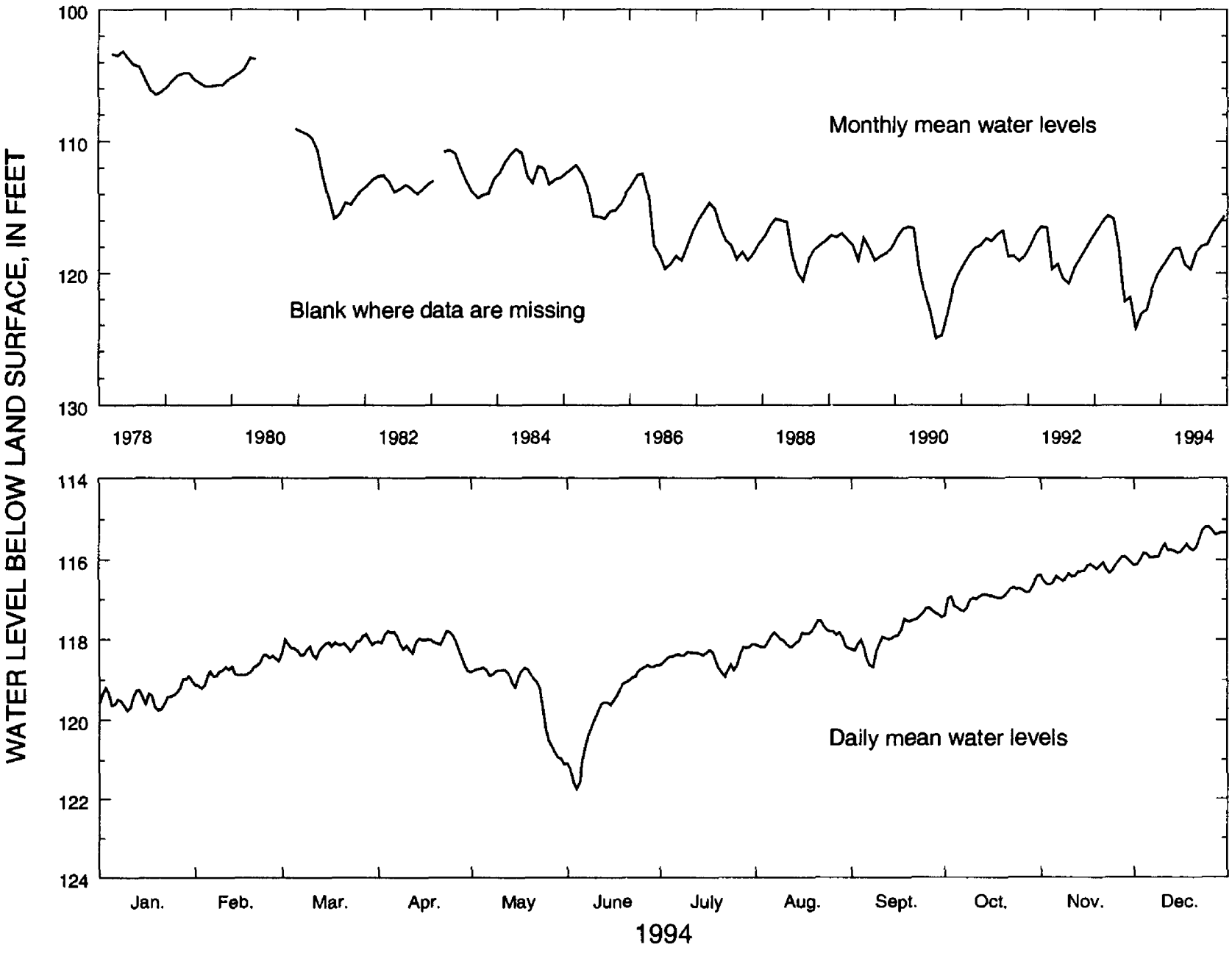
Figure 35.—Water level in observation well 15L020, Worth County.

South-central area

The water level in the Upper Floridan aquifer in south-central Georgia was monitored in six wells in 1994 and data from four of these wells (fig. 27) are summarized in figures 36-39. Water levels in wells tapping the aquifer in this area are affected by variations in precipitation, evapotranspiration, and to a lesser degree, pumping (Krause, 1979). In the Valdosta area, water levels also are affected by streamflow (Krause, 1979). The water level generally is highest following the winter and spring rainy seasons, and lowest in the fall. The annual mean water levels in well 18K049 in Tift County (fig. 36) and in well 18H016 in Cook County (fig. 37) were 1.8 and 0.5 ft higher in 1994 than in 1993, respectively.

The Upper Floridan aquifer receives recharge from the Withlacoochee River north of Valdosta where water from the river flows directly into sinkholes and large solution openings in the aquifer. In this area, increased precipitation and streamflow in winter and early spring result in higher ground-water levels. During most years, decreased precipitation and increased evapotranspiration in the summer results in lower streamflow and, correspondingly, lower ground-water levels. The annual mean water levels in well 19E009 (fig. 38) and 19F039 (fig. 39) were 6.3 and 8.4 ft higher in 1994 than in 1993, respectively.

312712082593301 Local number, 18K049.
LOCATION.—Lat 31°27′12″, long 82°59′33″, Hydrologic Unit 03110203.
SITE NAME.—U.S. Geological Survey, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 620 ft, cased to 270 ft, open hole.
DATUM.—Altitude of land-surface datum is 330 ft.
REMARKS.—None.
PERIOD OF RECORD.—March 1978 to current year. Continuous record since March 1978.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 102.70 ft below land-surface datum, May 14, 1978; lowest, 126.71 ft below land-surface datum, August 27, 1993.

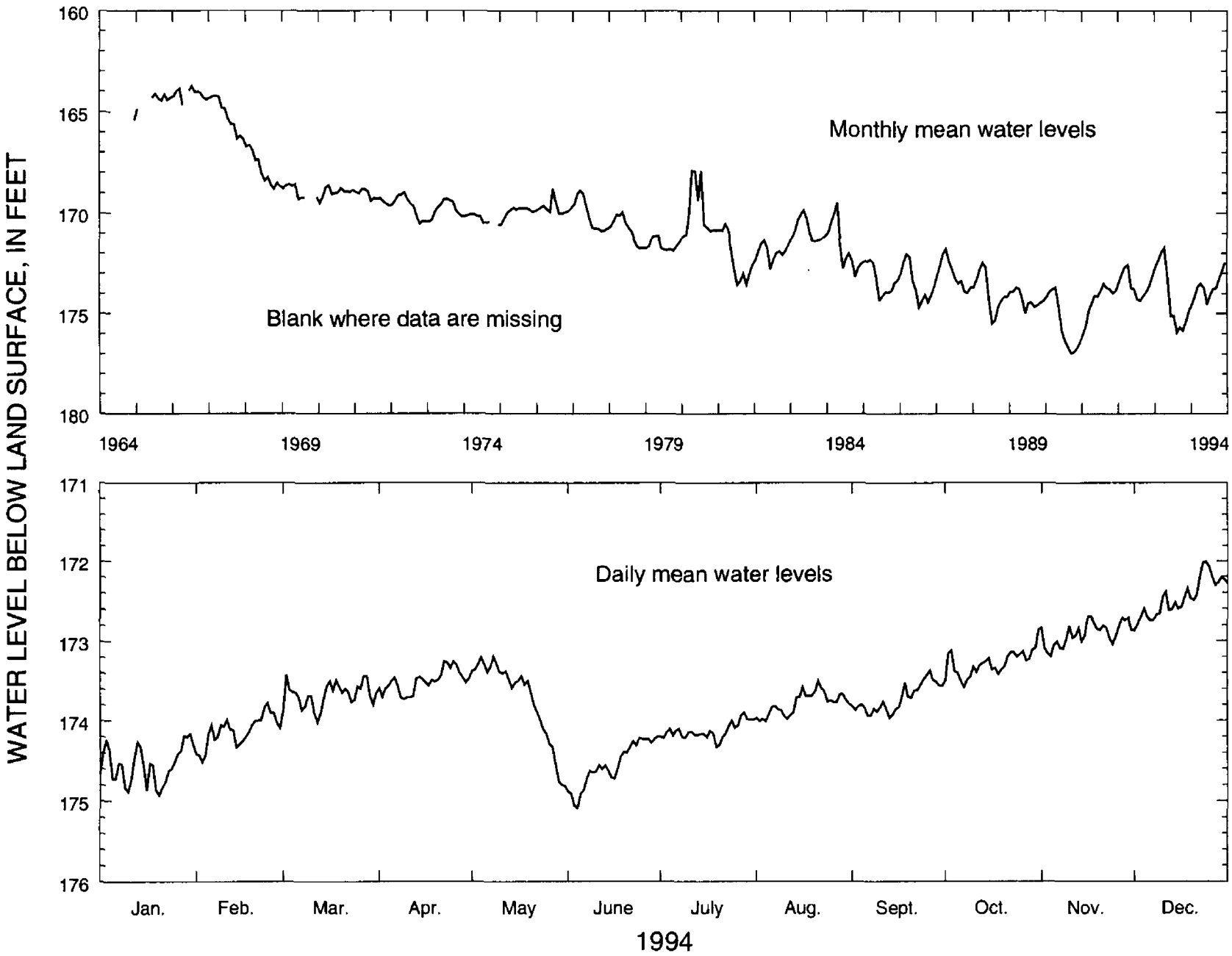


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	118.91	118.39	117.87	117.79	118.70	118.64	118.12	117.53	117.21	116.39	115.91	115.17
MEAN	119.42	118.77	118.17	118.09	119.31	119.72	118.45	117.94	117.82	116.91	116.28	115.66
LOW	119.76	119.21	118.47	118.79	121.11	121.75	118.93	118.23	118.69	117.40	116.62	116.13

SUMMARY FOR 1994 HIGH 115.17 (Dec. 25, 1994) MEAN 118.04 LOW 121.75 (June 4, 1994)

Figure 36.—Water level in observation well 18K049, Tift County.

310813083260301 Local number, 18H016.
LOCATION.—Lat 31°08′13″, long 83°26′03″, Hydrologic Unit 03110203.
SITE NAME.—U.S. Geological Survey, Adel test well.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 8 in., depth 865 ft, cased to 207 ft, open hole.
DATUM.—Altitude of land-surface datum is 241 ft.
REMARKS.—None.
PERIOD OF RECORD.—December 1964 to current year. Continuous record since June 1965.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 163.34 ft below land-surface datum, July 5, 1966; lowest, 177.39 ft below land-surface datum, October 8, 1990.

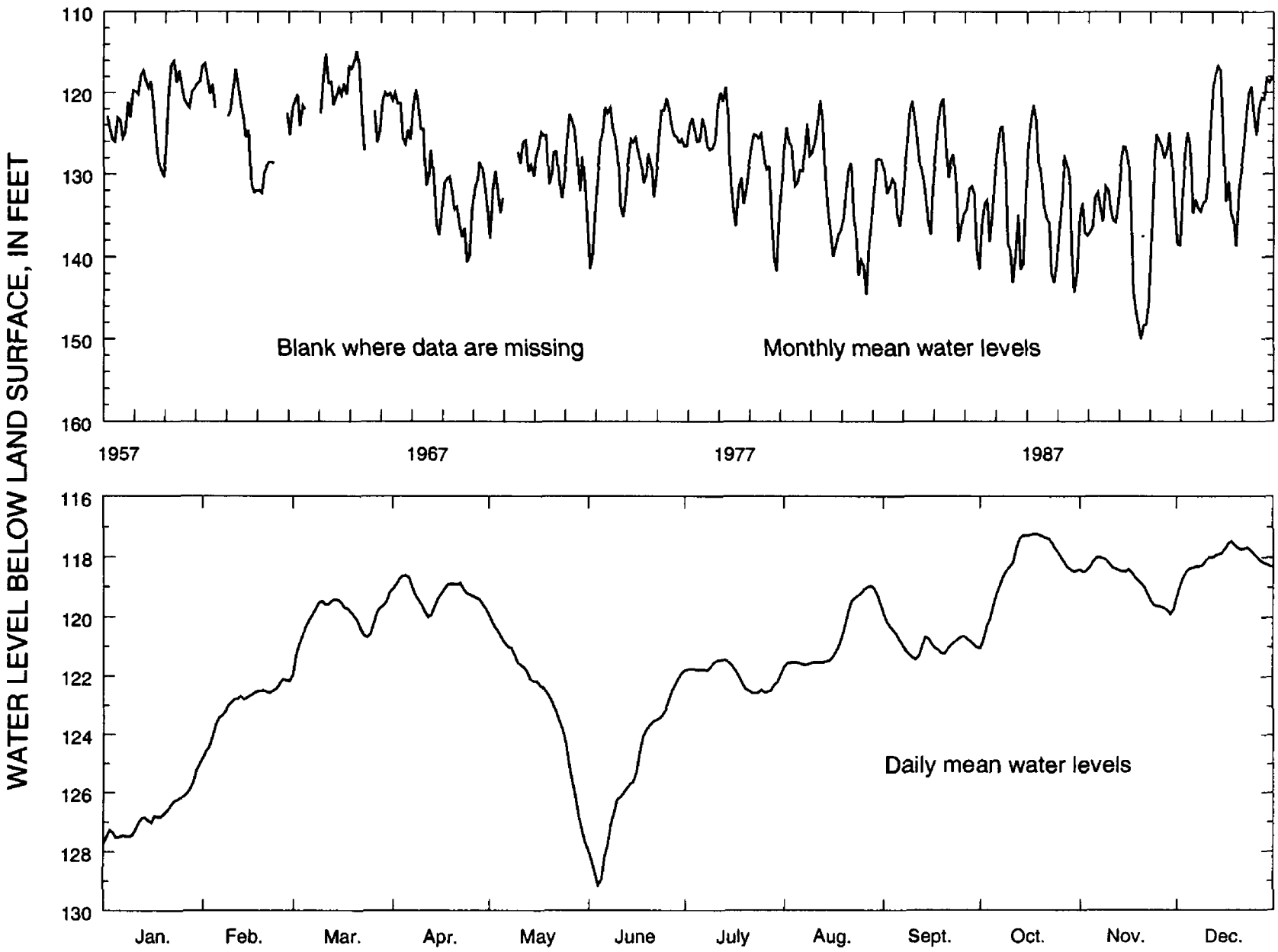


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	174.17	173.78	173.42	173.26	173.19	174.20	173.90	173.50	173.37	172.86	172.70	172.01
MEAN	174.55	174.13	173.67	173.51	173.73	174.55	174.13	173.79	173.72	173.28	172.91	172.46
LOW	174.93	174.52	174.02	173.73	174.82	175.09	174.33	174.01	173.97	173.58	173.19	172.87

SUMMARY FOR 1994 HIGH 172.01 (Dec. 24, 1994) MEAN 173.70 LOW 175.09 (June 4, 1994)

Figure 37.—Water level in observation well 18H016, Cook County.

304949083165301 Local number, 19E009.
LOCATION.—Lat 30°49′51″, long 83°16′58″, Hydrologic Unit 03110202.
SITE NAME.—City of Valdosta.
INSTRUMENTATION.—Electronic data recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused municipal supply well, diameter 20 in., depth 342 ft, cased to 200 ft, open hole.
DATUM.—Altitude of land-surface datum is 217 ft.
REMARKS.—None.
PERIOD OF RECORD.—February 1957 to current year. Continuous record since February 1957.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 112.69 ft below land-surface datum, March 9, 1964; lowest, 151.79 ft below land-surface datum, September 19, 1990.

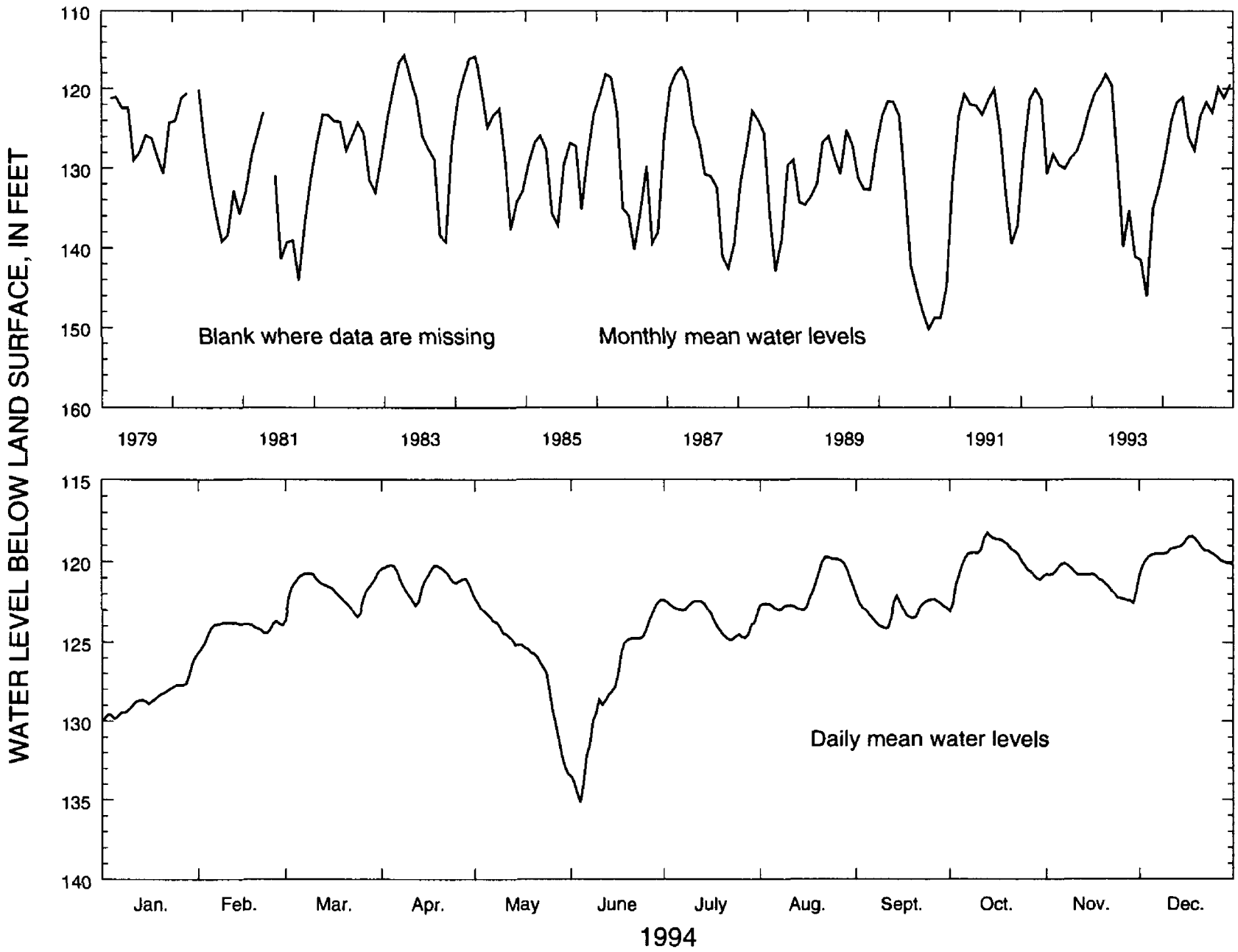


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	125.00	122.09	119.16	118.60	119.90	121.89	121.43	118.94	119.85	117.22	117.99	117.46
MEAN	126.76	122.93	120.00	119.19	122.74	125.27	121.97	120.62	120.84	118.29	118.76	118.08
LOW	127.74	124.81	121.94	119.98	127.71	129.13	122.55	121.67	121.41	121.03	119.88	119.32

SUMMARY FOR 1994 HIGH 117.22 (Oct. 18, 1994) MEAN 121.28 LOW 129.13 (June 4, 1994)

Figure 38.—Water level in observation well 19E009, Lowndes County.

305241083154401 Local number, 19F039.
LOCATION.—Lat 30°52′41″, long 83°15′46″, Hydrologic Unit 03110203.
SITE NAME.—City of Valdosta, well 8.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused municipal supply well, diameter 16 in., depth 450 ft, cased to 350 ft, open hole.
DATUM.—Altitude of land-surface datum is 222 ft.
REMARKS.—None.
PERIOD OF RECORD.—February 1979 to current year. Continuous record since February 1979.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 114.28 ft below land-surface datum, April 9, 1984; lowest, 151.28 ft below land-surface datum, October 9, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	125.91	123.71	120.62	120.21	122.23	122.36	122.36	119.72	122.03	118.22	120.12	118.43
MEAN	128.55	124.15	121.77	121.09	126.07	127.67	123.48	121.70	123.00	119.86	121.17	119.44
LOW	130.01	125.64	123.65	122.72	133.37	135.20	124.83	123.00	124.13	123.06	122.54	120.84

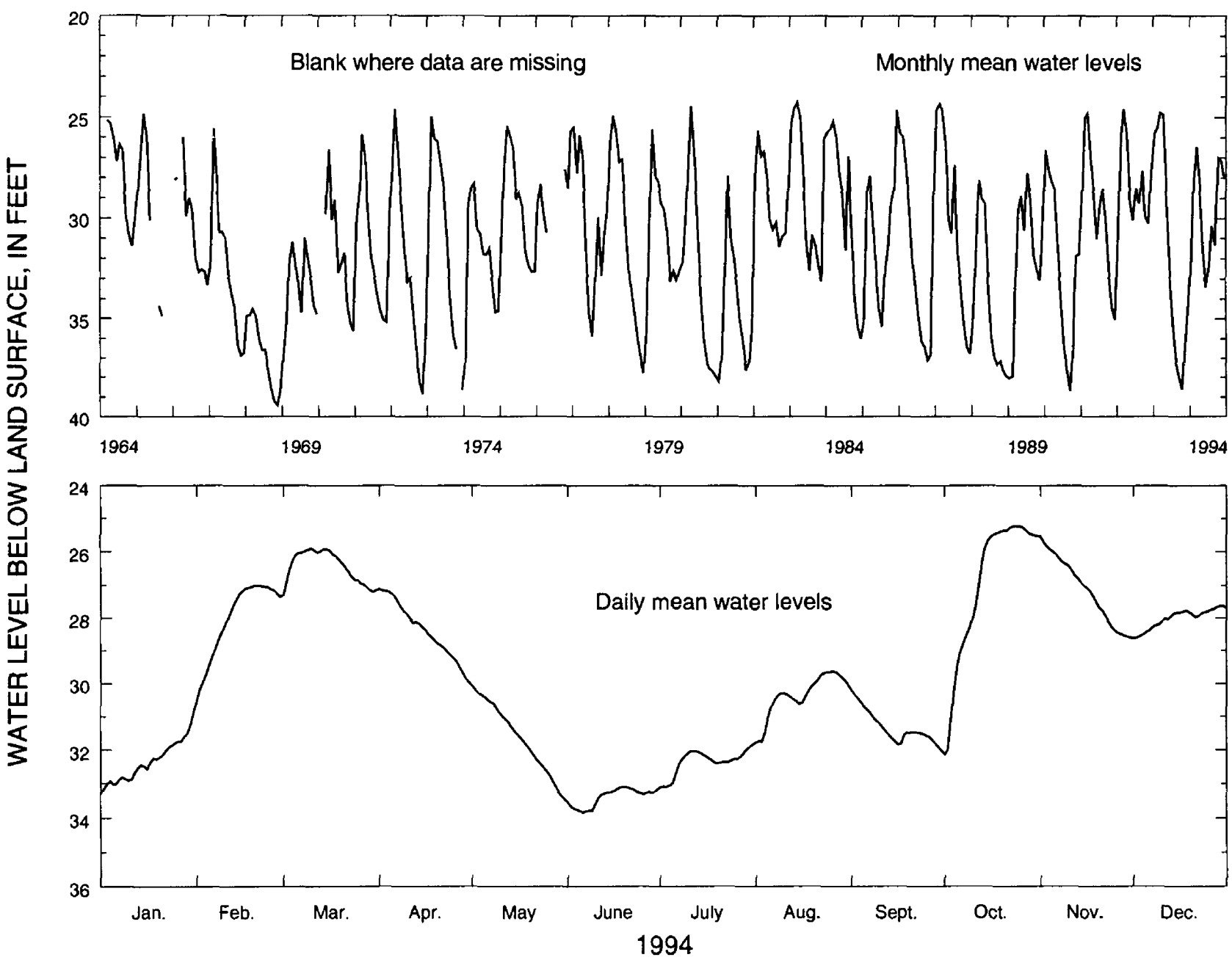
SUMMARY FOR 1994 HIGH 118.22 (Oct. 13, 1994) MEAN 123.15 LOW 135.20 (June 4, 1994)

Figure 39.—Water level in observation well 19F039, Lowndes County.

East-central area

The water level in the Upper Floridan aquifer in east-central Georgia was monitored in 18 wells in 1994 and data for three of these wells (fig. 27) are summarized in figures 40-42. Well 21T001 (fig. 40) in Laurens County is located near the recharge area for the Upper Floridan aquifer, and the water level in this well (fig. 40) responds primarily to seasonal fluctuations in precipitation. The annual mean water level in this well was 2.2 ft higher in 1994 than in 1993. The 1994 annual mean water levels in well 25Q001 in Montgomery County (fig. 41) and well 26R001 in Toombs County (fig. 42) were 1.0 and 0.2 ft lower than in 1993, respectively.

322652083033001 Local number, 21T001.
LOCATION.—Lat 32°27′06″, long 83°03′28″, Hydrologic Unit 03070102.
SITE NAME.—Danny Hogan.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 4 in., depth 123 ft, cased to 89 ft, open hole.
DATUM.—Altitude of land-surface datum is 259 ft.
REMARKS.—None.
PERIOD OF RECORD.—March 1964 to current year. Continuous record since March 1964.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 23.62 ft below land-surface datum, January 26, 1987; lowest, 39.58 ft below land-surface datum, November 12, 1968.

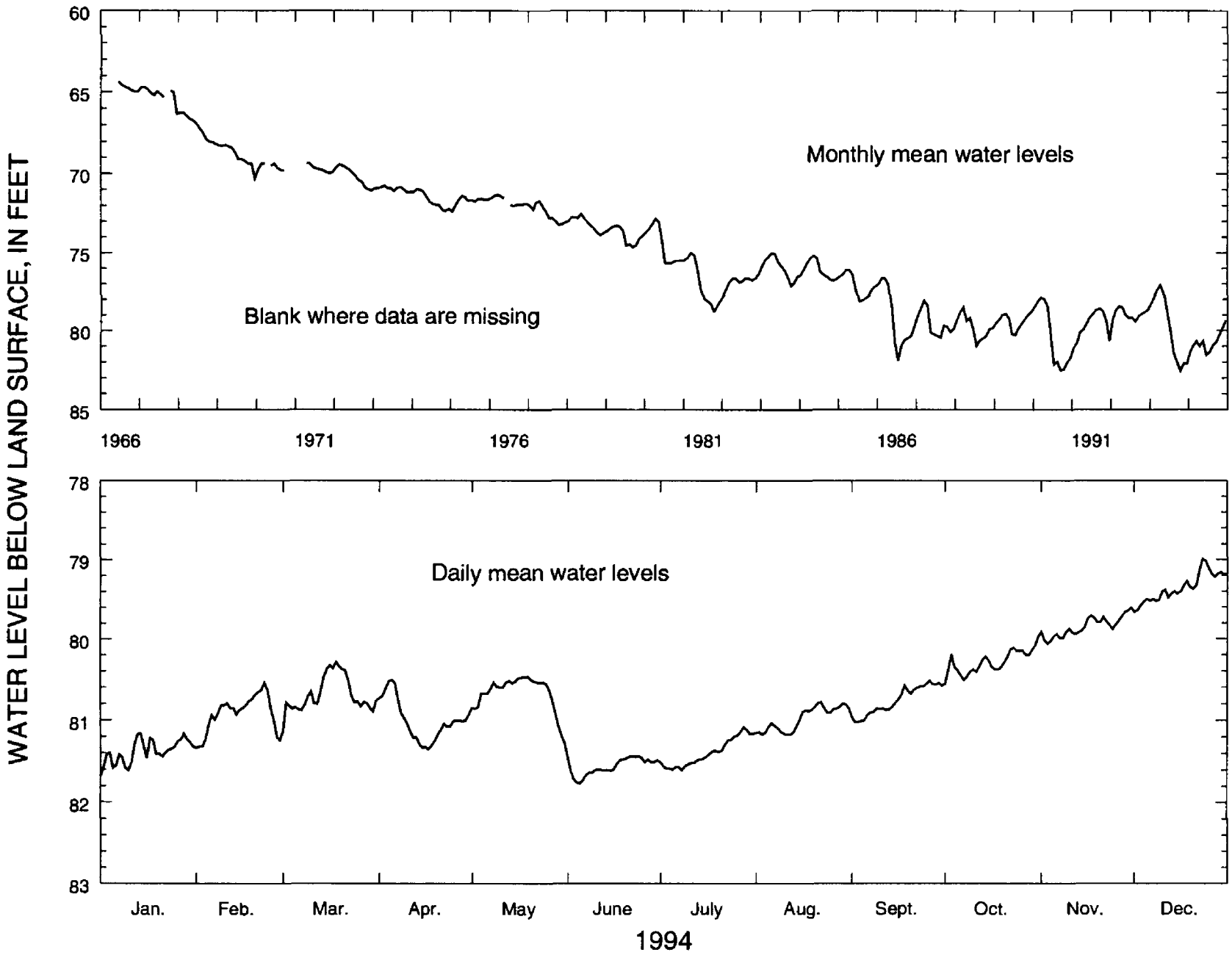


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	30.90	27.01	25.89	27.13	30.07	33.10	31.84	29.64	30.21	25.22	25.55	27.63
MEAN	32.36	28.00	26.43	28.38	31.63	33.40	32.36	30.37	31.33	26.98	27.14	28.01
LOW	33.30	30.50	27.30	29.97	33.45	33.83	33.10	31.78	32.03	32.12	28.59	28.62

SUMMARY FOR 1994 HIGH 25.22 (Oct. 24, 1994) MEAN 29.71 LOW 33.83 (June 6, 1994)

Figure 40.—Water level in observation well 21T001, Laurens County.

320226082301101 Local number, 25Q001.
LOCATION.—Lat 32°02′25″, long 82°30′05″, Hydrologic Unit 03070106.
SITE NAME.—Montgomery County Board of Education.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 6 in., depth 536 ft, cased to 421 ft, open hole.
DATUM.—Altitude of land-surface datum is 190 ft.
REMARKS.—None.
PERIOD OF RECORD.—June 1966 to current year. Continuous record since June 1966.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 64.13 ft below land-surface datum, June 10, 1966; lowest, 82.94 ft below land-surface datum, October 7, 1990.

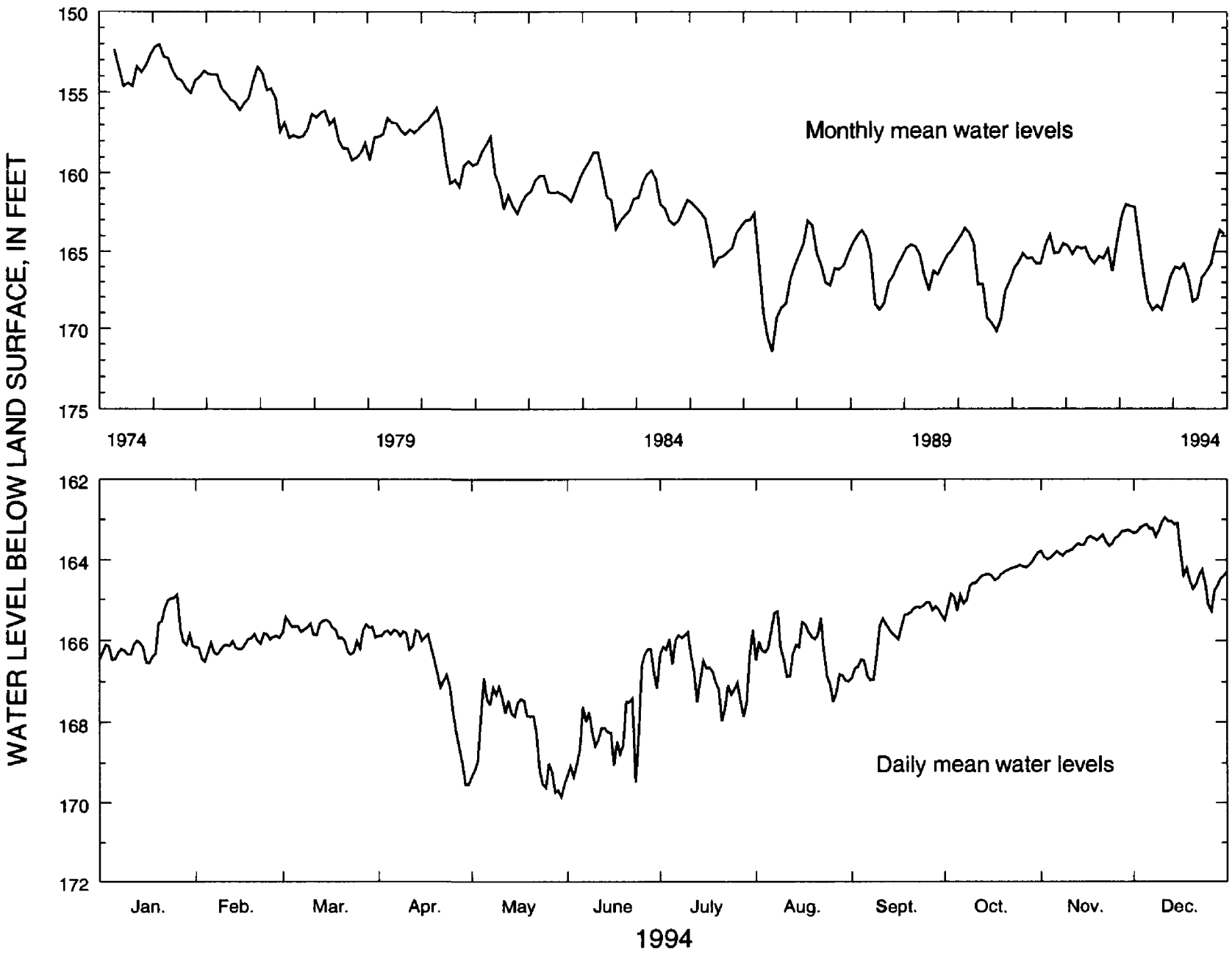


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	81.16	80.54	80.29	80.51	80.47	81.43	81.08	80.78	80.52	79.97	79.61	78.99
MEAN	81.38	80.92	80.69	81.00	80.67	81.55	81.39	80.98	80.76	80.29	79.85	79.35
LOW	81.68	81.34	81.13	81.35	81.28	81.76	81.60	81.17	81.02	80.56	80.06	79.66

SUMMARY FOR 1994 HIGH 78.99 (Dec. 23, 1994) MEAN 80.73 LOW 81.76 (June 5, 1994)

Figure 41.—Water level in observation well 25Q001, Montgomery County.

321302082243601 Local number, 26R001.
LOCATION.—Lat 32°13′02″, long 82°24′36″, Hydrologic Unit 03070107.
SITE NAME.—City of Vidalia, well 2.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled municipal supply well, diameter 12 in., depth 1,000 ft, cased to 720 ft, open hole.
DATUM.—Altitude of land-surface datum is 285 ft.
REMARKS.—None.
PERIOD OF RECORD.—April 1974 to current. Continuous record since April 1974.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 151.64 ft below land-surface datum, April 15, 1974; lowest, 171.94 ft below land-surface datum, July 10, 1986.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	164.88	165.83	165.43	165.74	166.90	166.21	165.73	165.29	165.07	163.81	163.26	162.95
MEAN	165.99	166.10	165.79	166.66	168.28	168.03	166.71	166.29	165.80	164.50	163.61	163.87
LOW	166.55	166.52	166.34	169.53	169.84	169.48	167.97	167.49	166.96	165.50	163.98	165.27

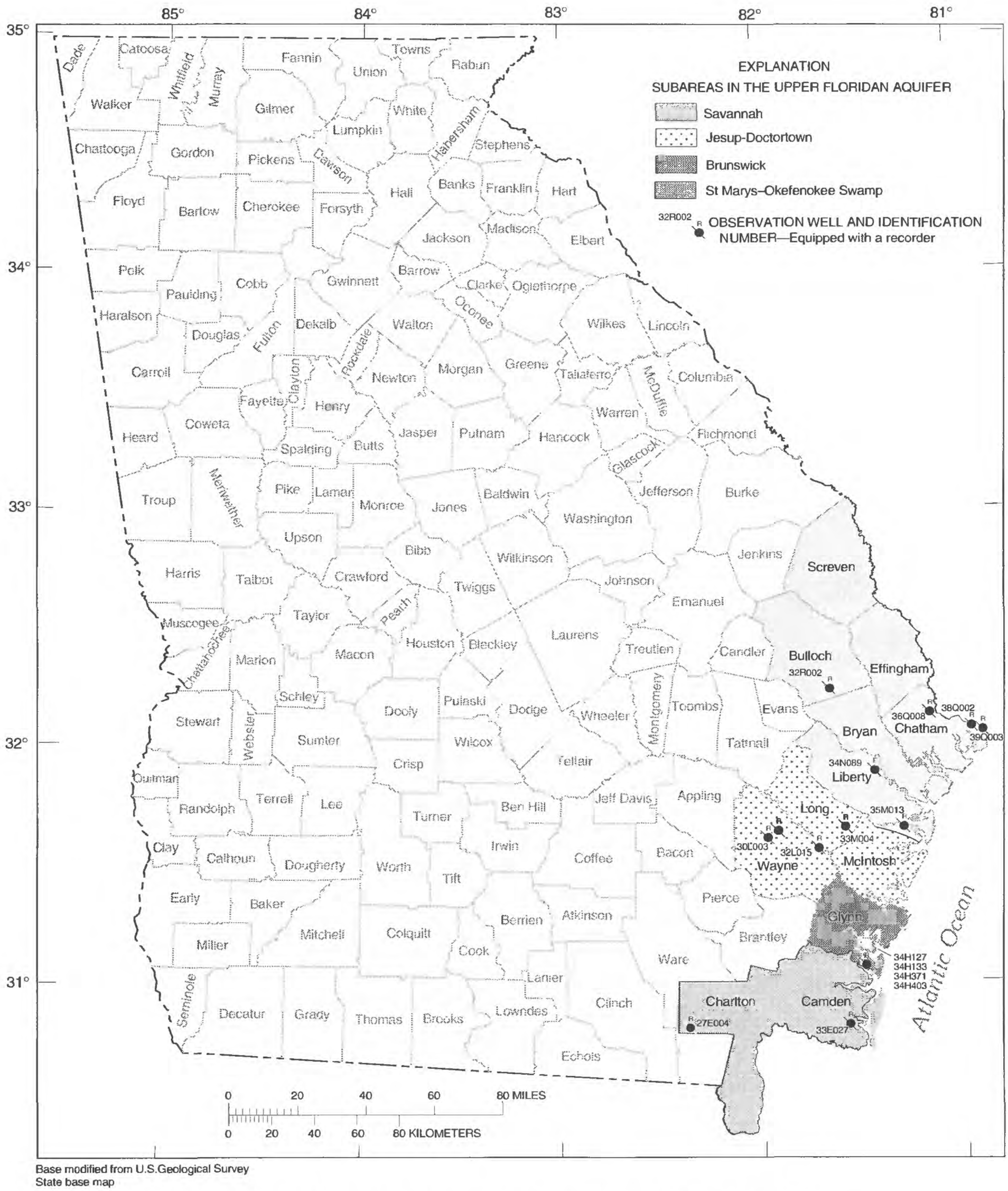
SUMMARY FOR 1994 HIGH 162.95 (Dec. 11, 1994) MEAN 165.96 LOW 169.84 (May 30, 1994)

Figure 42.—Water level in observation well 26R001, Toombs County.

Coastal area

The water level in the Upper Floridan aquifer in the coastal area was monitored in 22 wells in 1994 and data from 16 of these wells (fig. 43) are summarized in figures 44-59. Because the Upper Floridan aquifer in this area is deeply buried and far from the outcrop area, the ground-water level is influenced primarily by pumping and not by recharge from local precipitation (Clarke and others, 1990).

The coastal area is divided into four subareas on the basis of major pumping centers: (1) the Savannah subarea; (2) the Jesup-Doctortown subarea; (3) the Brunswick subarea; and (4) the St Marys-Okefenokee Swamp subarea (fig. 43). Within a subarea, hydrographs for wells have similar water-level changes. Industrial shutdowns, during which the amount of ground water withdrawn is greatly reduced, are indicated by sharp water-level rises on hydrographs from wells located in the same hydrologic subarea.



Base modified from U.S.Geological Survey
State base map

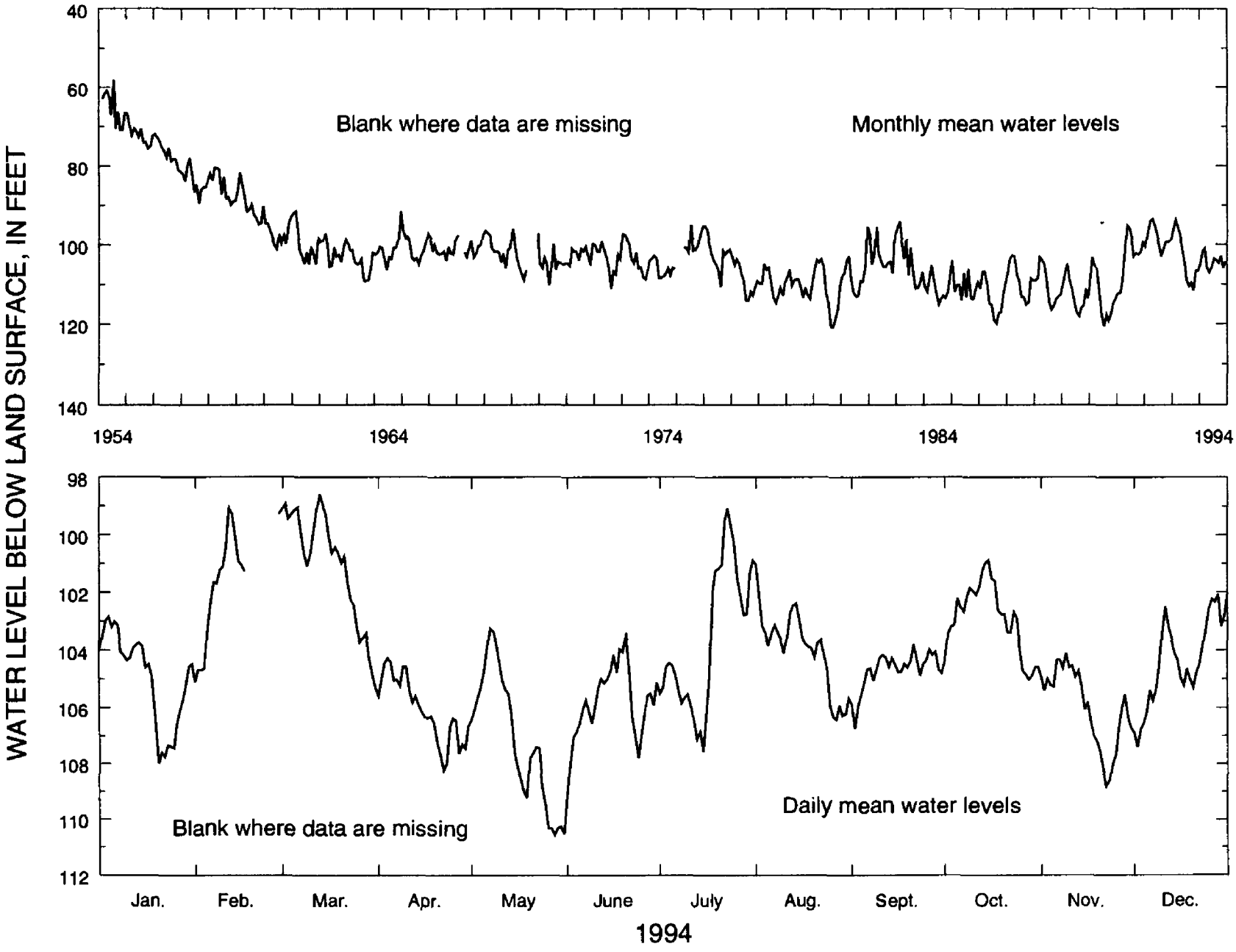
Figure 43.—Subareas and locations of observation wells completed in the Upper Floridan aquifer.

Savannah subarea

The water level in the Upper Floridan aquifer in the Savannah subarea was monitored in 11 wells in 1994 and data from 7 of these wells (fig. 43) are summarized in figures 44-50. In this subarea, the water level in the Upper Floridan aquifer mainly is affected by pumping for municipal and industrial uses, and as a result of this pumping, a cone of depression has developed in the potentiometric surface at Savannah (Peck, 1991).

Hydrographs for observation wells near the center of pumping in Savannah and in outlying areas illustrate the effects of pumping on the ground-water levels. The 1994 annual mean water levels in wells near the area of the cone of depression at Savannah (figs. 44-47) were from 0.9 ft lower to 0.4 ft higher than in 1993. During 1994, the annual mean water levels in wells in the outlying areas (figs. 48-50) were from 0.9 to 1.0 ft lower than in 1993.

320530081085001 Local number, 36Q008.
LOCATION.—Lat 32°05′30″, long 81°08′50″, Hydrologic Unit 03060204.
SITE NAME.—Layne-Atlantic Co.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—*Upper Floridan aquifer.*
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 4 in., depth 406 ft, cased to 250 ft, open hole.
DATUM.—Altitude of land-surface datum is 9.91 ft.
REMARKS.—Water levels for period, February 18-27, are missing.
PERIOD OF RECORD.—February 1954 to current year. Continuous record since February 1954.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 49.17 ft below land-surface datum, July 11, 1954; lowest, 124.40 ft below land-surface datum, August 30, 1980.

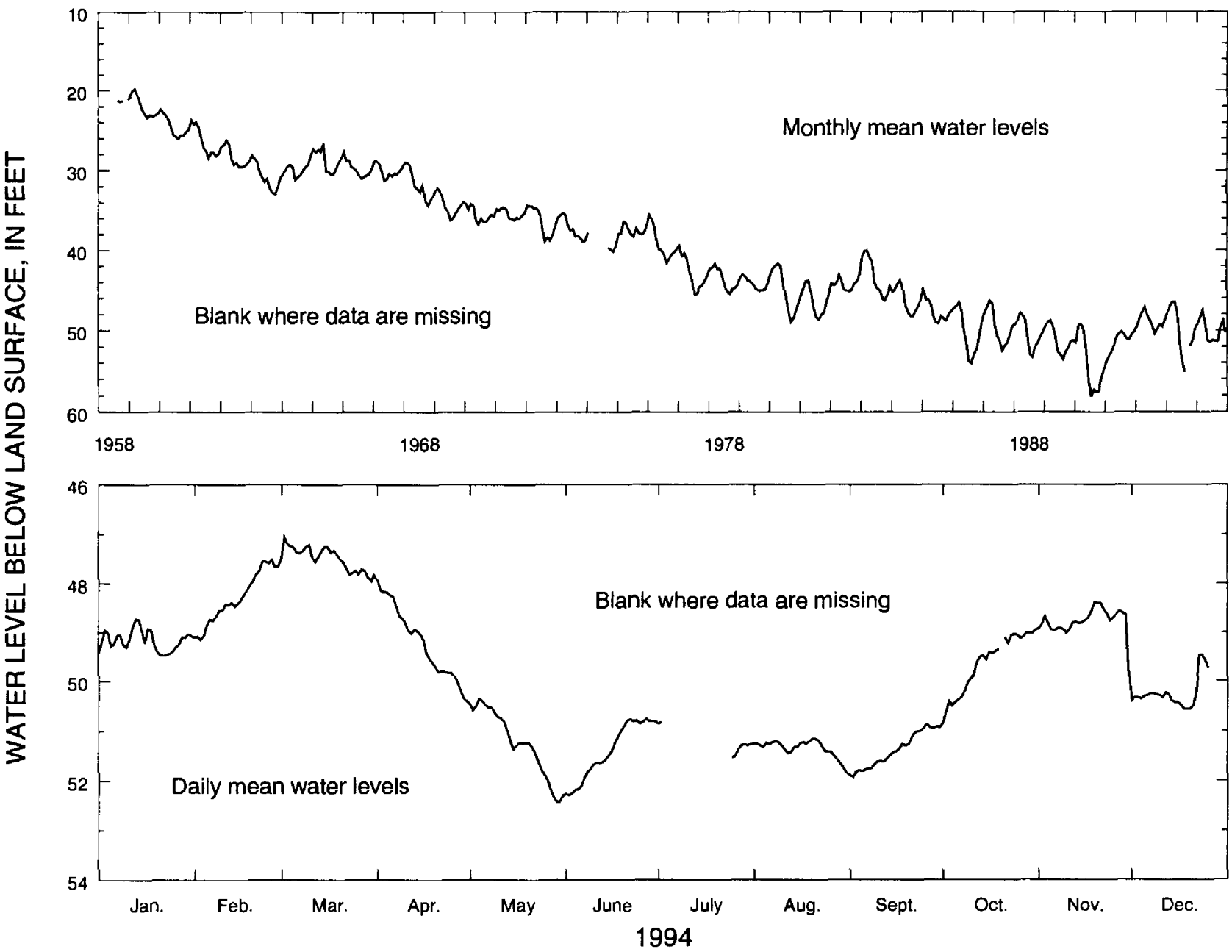


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	102.84	------	98.57	104.29	103.26	103.40	99.08	101.03	103.81	100.87	104.11	102.03
MEAN	104.95	------	101.01	106.08	107.17	105.83	103.62	103.99	104.70	102.93	106.00	104.35
LOW	108.01	------	105.28	108.24	110.58	109.26	107.56	106.42	106.74	105.02	108.81	107.41

SUMMARY FOR 1994 HIGH 98.57 (Mar. 13, 1994) MEAN 104.44 LOW 110.58 (May 28, 1994)

Figure 44.—Water level in observation well 36Q008, Chatham County.

320021081124801 Local number, 36Q020.
LOCATION.—Lat 32°00′18″, long 81°12′48″, Hydrologic Unit 03060204.
SITE NAME.—H. J. Morrison.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 3 in., depth 365 ft, cased to 330 ft, open hole.
DATUM.—Altitude of land-surface datum is 13 ft.
REMARKS.—Water levels for periods, July 3-24, October 20, and December 27-31, are missing.
PERIOD OF RECORD.—March 1958 to current year. Continuous record since August 1958.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 17.66 ft below land-surface datum, June 28, 1958; lowest, recorded, 58.56 ft below land-surface datum, July 12, 1990, but may have been lower during period of missing record, July 13-22, 1990.

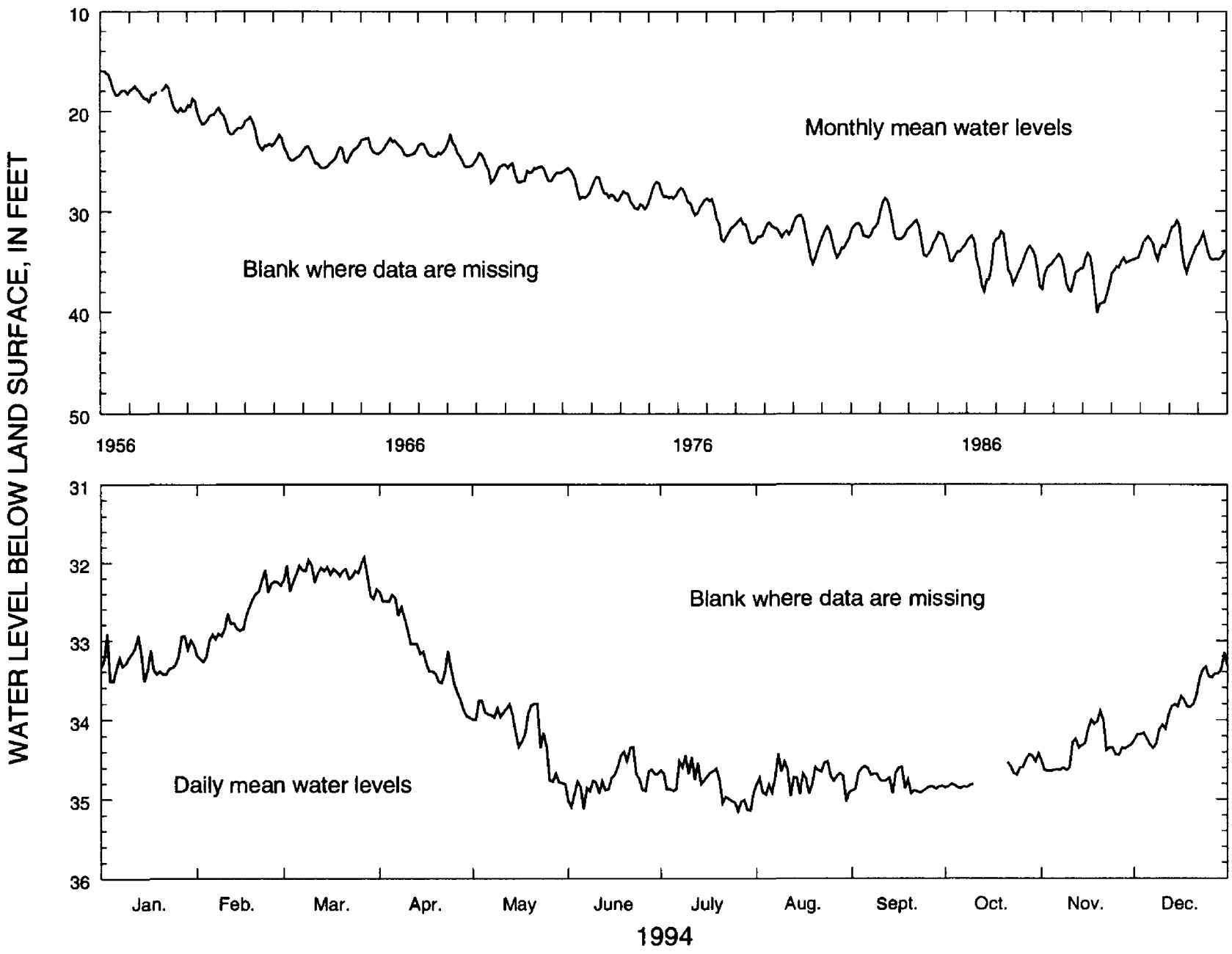


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	48.71	47.52	47.05	47.93	50.35	50.76	------	51.15	50.87	48.95	48.38	49.47
MEAN	49.16	48.29	47.49	49.19	51.22	51.40	------	51.34	51.39	49.63	48.76	50.25
LOW	49.47	49.15	47.95	50.40	52.42	52.29	------	51.85	51.92	50.85	49.76	50.57

SUMMARY FOR 1994 HIGH 47.05 (Mar. 2, 1994) MEAN 49.87 LOW 52.42 (May 29, 1994)

Figure 45.—Water level in observation well 36Q020, Chatham County.

320202080541201 Local number, 38Q002.
LOCATION.—Lat 32°02′01″, long 80°54′11″, Hydrologic Unit 03060204.
SITE NAME.—National Park Service, test well 6.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 8 in., depth 348 ft, cased to 110 ft, open hole.
DATUM.—Altitude of land-surface datum is 8.0 ft.
REMARKS.—Water levels for period, October 11-20, are missing.
PERIOD OF RECORD.—February 1956 to current year. Continuous record since February 1956.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 16.00 ft below land-surface datum, March 5, 1956; lowest, 40.69 ft below land-surface datum, July 16, 1990.

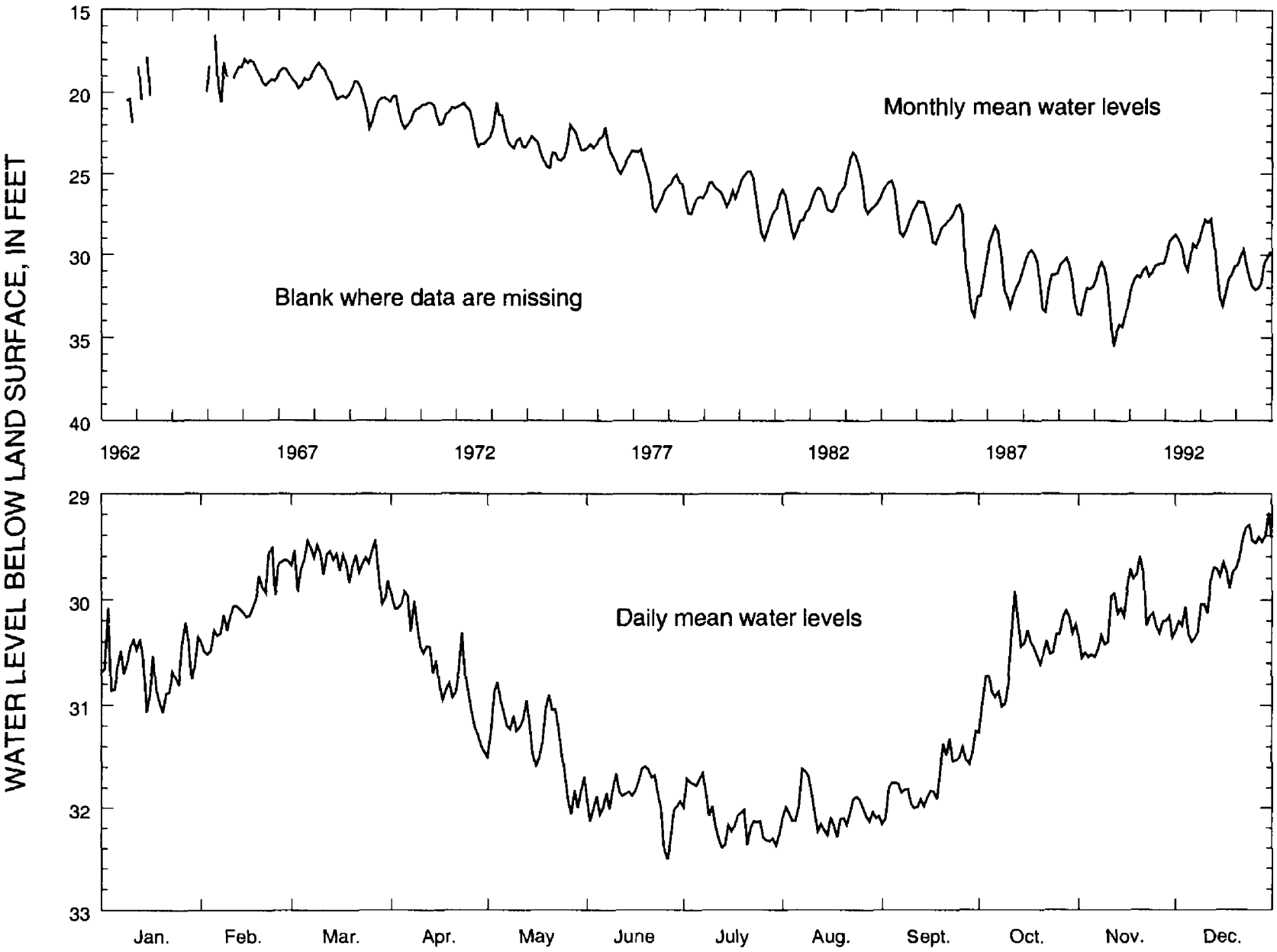


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	32.91	32.09	31.93	32.38	33.76	34.34	34.44	34.42	34.58	------	33.89	33.15
MEAN	33.25	32.70	32.14	33.14	34.14	34.74	34.81	34.74	34.78	------	34.37	33.81
LOW	33.52	33.27	32.46	33.97	34.80	35.12	35.15	35.03	34.93	------	34.64	34.35

SUMMARY FOR 1994 HIGH 31.93 (Mar. 27, 1994) MEAN 33.93 LOW 35.15 (July 26, 1994)

Figure 46.—Water level in observation well 38Q002, Chatham County.

320122080510204 Local number, 39Q003.
LOCATION.—Lat 32°01′22″, long 80°51′01″, Hydrologic Unit 03060204.
SITE NAME.—U.S. Geological Survey, test well 7.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 10 in., depth 600 ft, cased to 129 ft, open hole.
DATUM.—Altitude of land-surface datum is 7.0 ft.
REMARKS.—None.
PERIOD OF RECORD.—May 1962 to current year. Continuous record since December 1964.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 17.80 ft below land-surface datum, April 11, 1963; lowest, 36.07 ft below land-surface datum, July 11-12, 1990.

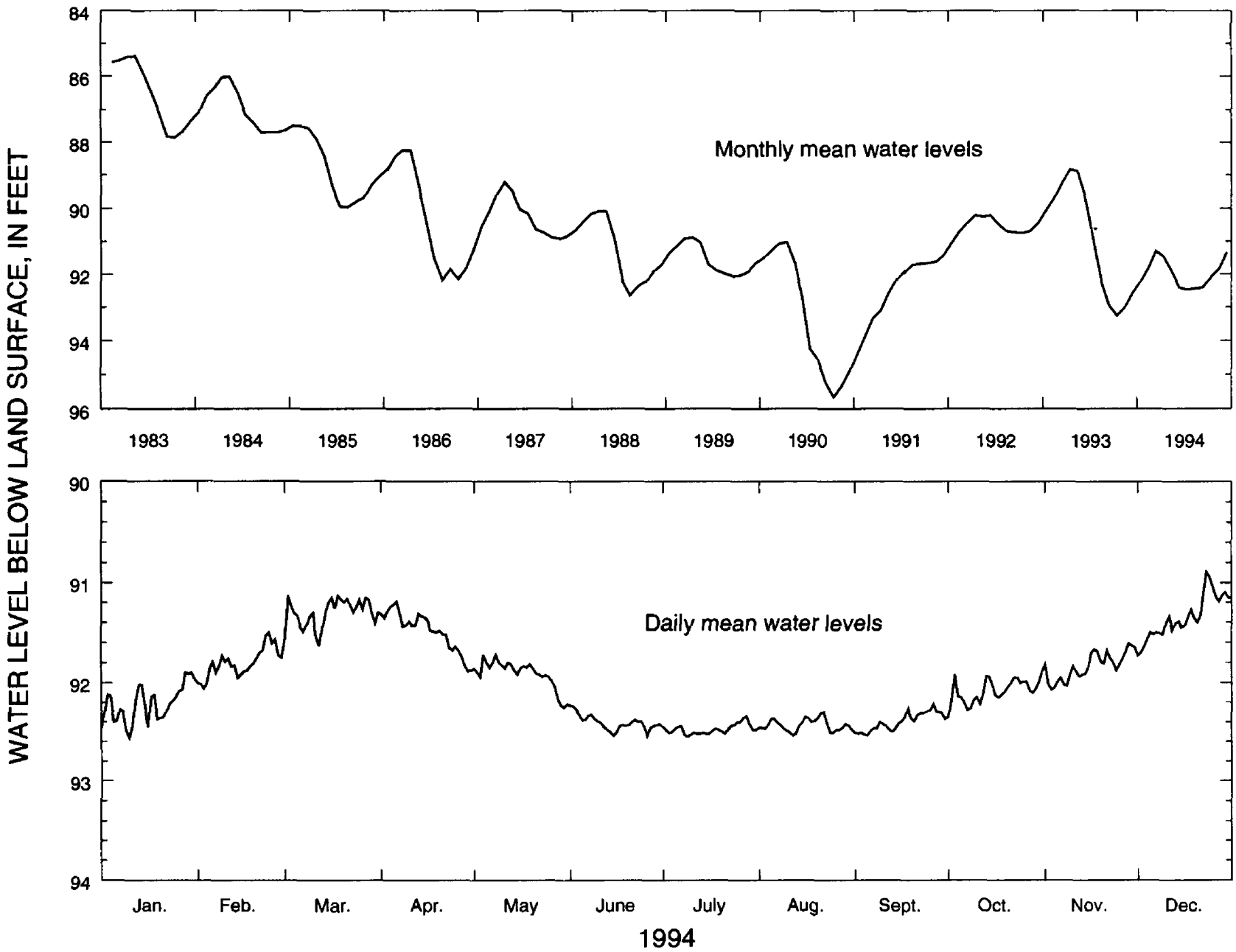


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	30.08	29.52	29.44	29.92	30.78	31.59	31.66	31.62	31.25	29.92	29.59	29.18
MEAN	30.64	30.05	29.66	30.60	31.33	31.91	32.10	32.04	31.72	30.52	30.18	29.79
LOW	31.07	30.52	30.04	31.45	32.06	32.51	32.39	32.29	32.16	31.26	30.55	30.39

SUMMARY FOR 1994 HIGH 29.18 (Dec. 30, 1994) MEAN 30.88 LOW 32.51 (June 26, 1994)

Figure 47.—Water level in observation well 39Q003, Chatham County.

321240081411501 Local number, 32R002.
LOCATION.—Lat 32°12′40″, long 81°41′15″, Hydrologic Unit 03060202.
SITE NAME.—Georgia Geologic Survey, Bulloch South, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 804 ft, cased to 420 ft, open hole.
DATUM.—Altitude of land-surface datum is 120 ft.
REMARKS.—None.
PERIOD OF RECORD.—February 1983 to current year. Continuous record since February 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 85.08 ft below land-surface datum, April 24, 1983; lowest, 95.94 ft below land-surface datum, October 8, 1990.

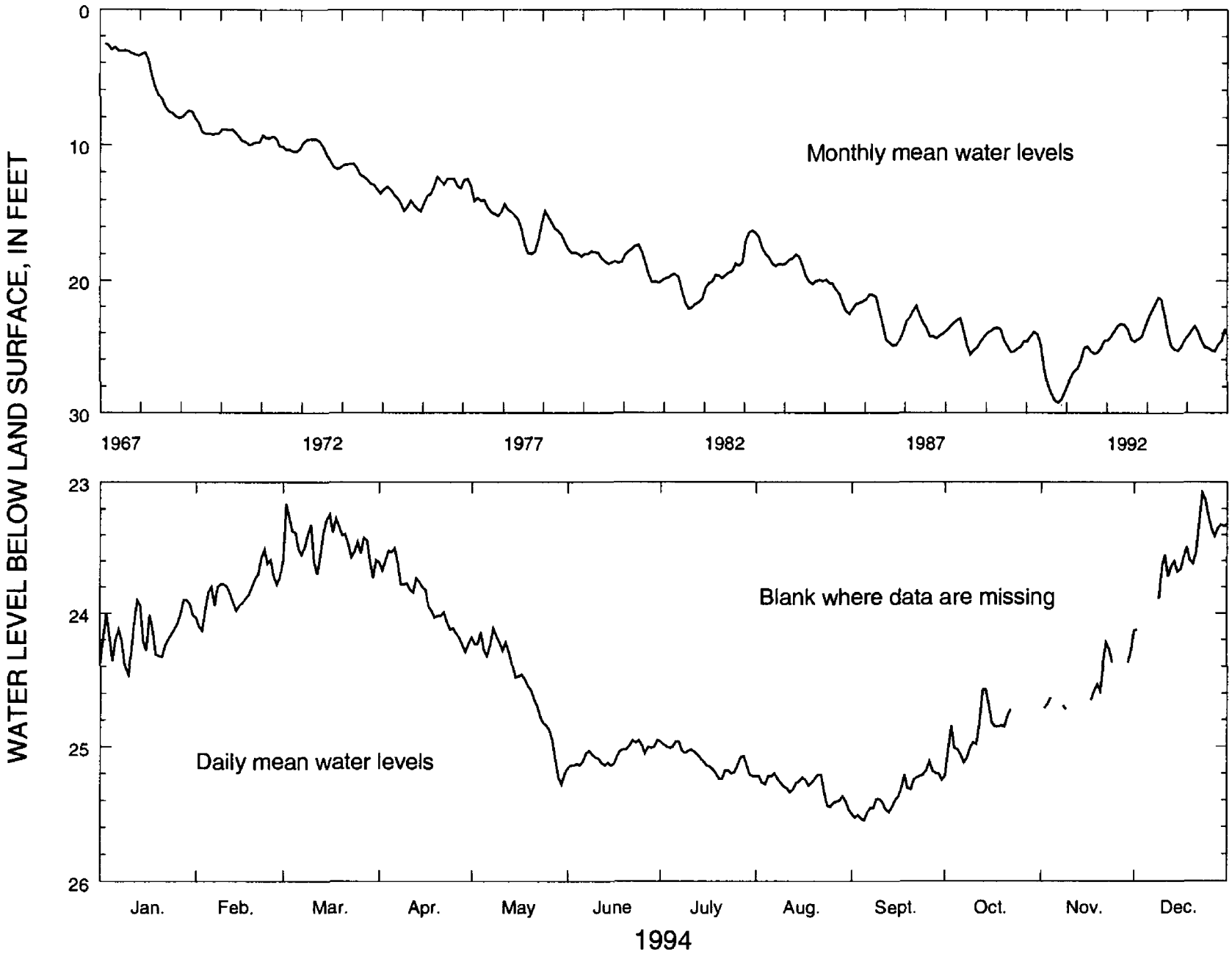


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	91.90	91.50	91.13	91.19	91.72	92.23	92.34	92.30	92.22	91.89	91.61	90.89
MEAN	92.22	91.80	91.30	91.48	91.91	92.41	92.47	92.43	92.40	92.08	91.84	91.34
LOW	92.56	92.06	91.63	91.89	92.25	92.54	92.55	92.54	92.54	92.35	92.07	91.73

SUMMARY FOR 1994 HIGH 90.89 (Dec. 23, 1994) MEAN 91.97 LOW 92.56 (Jan. 10, 1994)

Figure 48.—Water level in observation well 32R002, Bulloch County.

315214081235301 Local number, 34N089.
LOCATION.—Lat 31°52′14″, long 81°23′53″, Hydrologic Unit 03060204.
SITE NAME.—U.S. Geological Survey, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 789 ft, cased to 410 ft, open hole.
DATUM.—Altitude of land-surface datum is 17 ft.
REMARKS.—Water levels for periods, October 22-31, November 4-7, 9-16, 26-29, and December 2-8, are missing.
PERIOD OF RECORD.—February 1967 to current year. Continuous record since February 1967.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 2.34 ft below land-surface datum, March 6, 1967; lowest, 29.43 ft below land-surface datum, October 3, 1990.

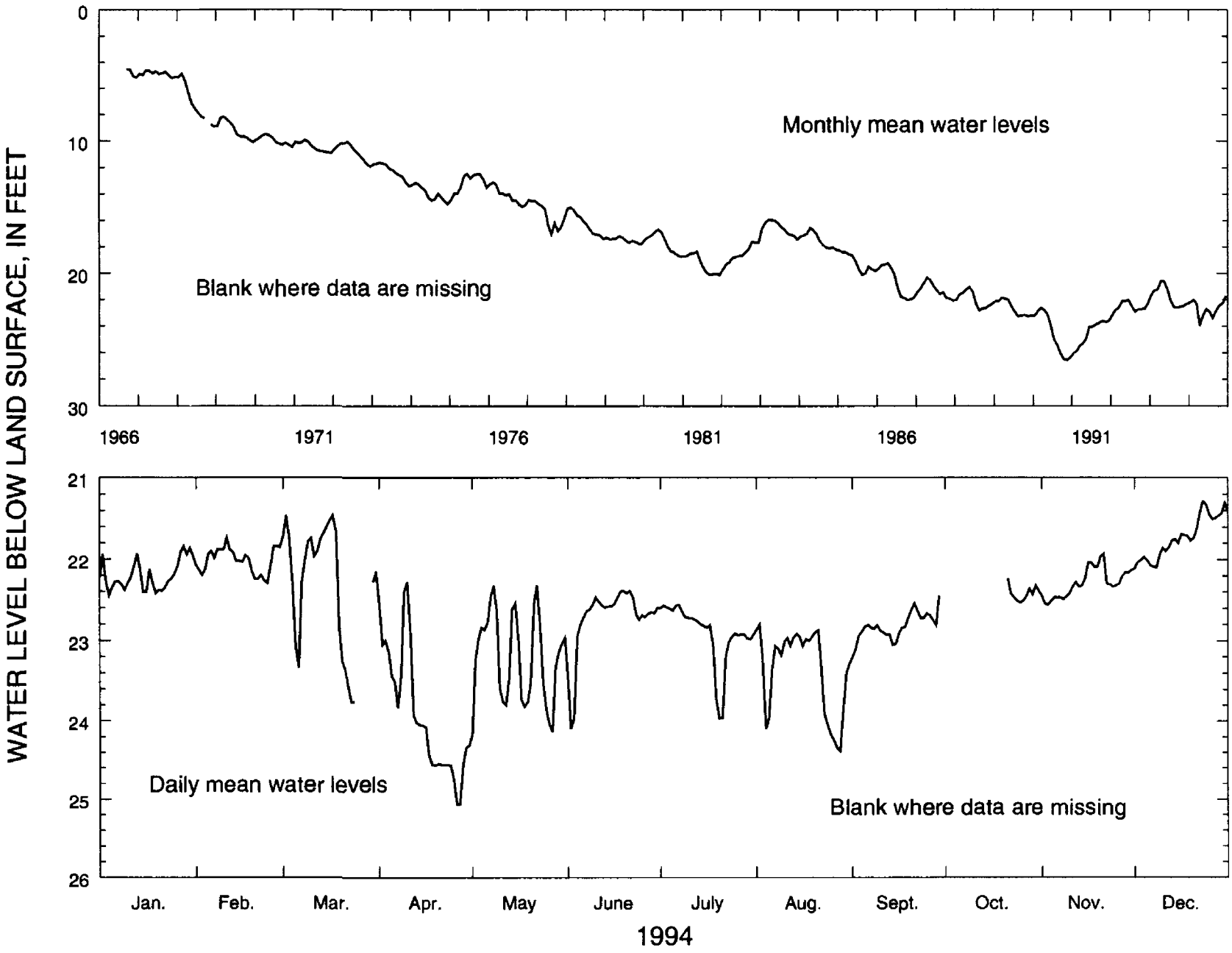


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	23.90	23.51	23.16	23.50	24.11	24.95	24.96	25.20	25.11	------	------	23.08
MEAN	24.16	23.82	23.45	23.88	24.54	25.06	25.10	25.30	25.35	------	------	23.65
LOW	24.46	24.13	23.73	24.29	25.28	25.16	25.24	25.47	25.55	------	------	24.13

SUMMARY FOR 1994 HIGH 23.08 (Dec. 23, 1994) MEAN 24.48 LOW 25.55 (Sept. 5, 1994)

Figure 49.—Water level in observation well 34N089, Liberty County.

313823081154201 Local number, 35M013.
LOCATION.—Lat 31°38′23″, long 81°15′42″, Hydrologic Unit 03060204.
SITE NAME.—U.S. Fish and Wildlife Service.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 10 in., depth 553 ft, cased to 376 ft, open hole.
DATUM.—Altitude of land-surface datum is 16.3 ft.
REMARKS.—Water levels for periods, March 25-29 and September 30 to October 20, are missing.
PERIOD OF RECORD.—September 1966 to current year. Continuous record since September 1966.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 4.35 ft below land-surface datum, October 4, 1966; lowest, 26.88 ft below land-surface datum, November 14, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	21.84	21.74	21.46	22.28	22.32	22.39	22.56	22.80	22.45	------	21.93	21.28
MEAN	22.20	22.02	22.30	23.94	23.21	22.72	22.91	23.36	22.82	------	22.29	21.73
LOW	22.45	22.29	23.76	25.06	24.17	24.10	23.97	24.38	23.21	------	22.56	22.11

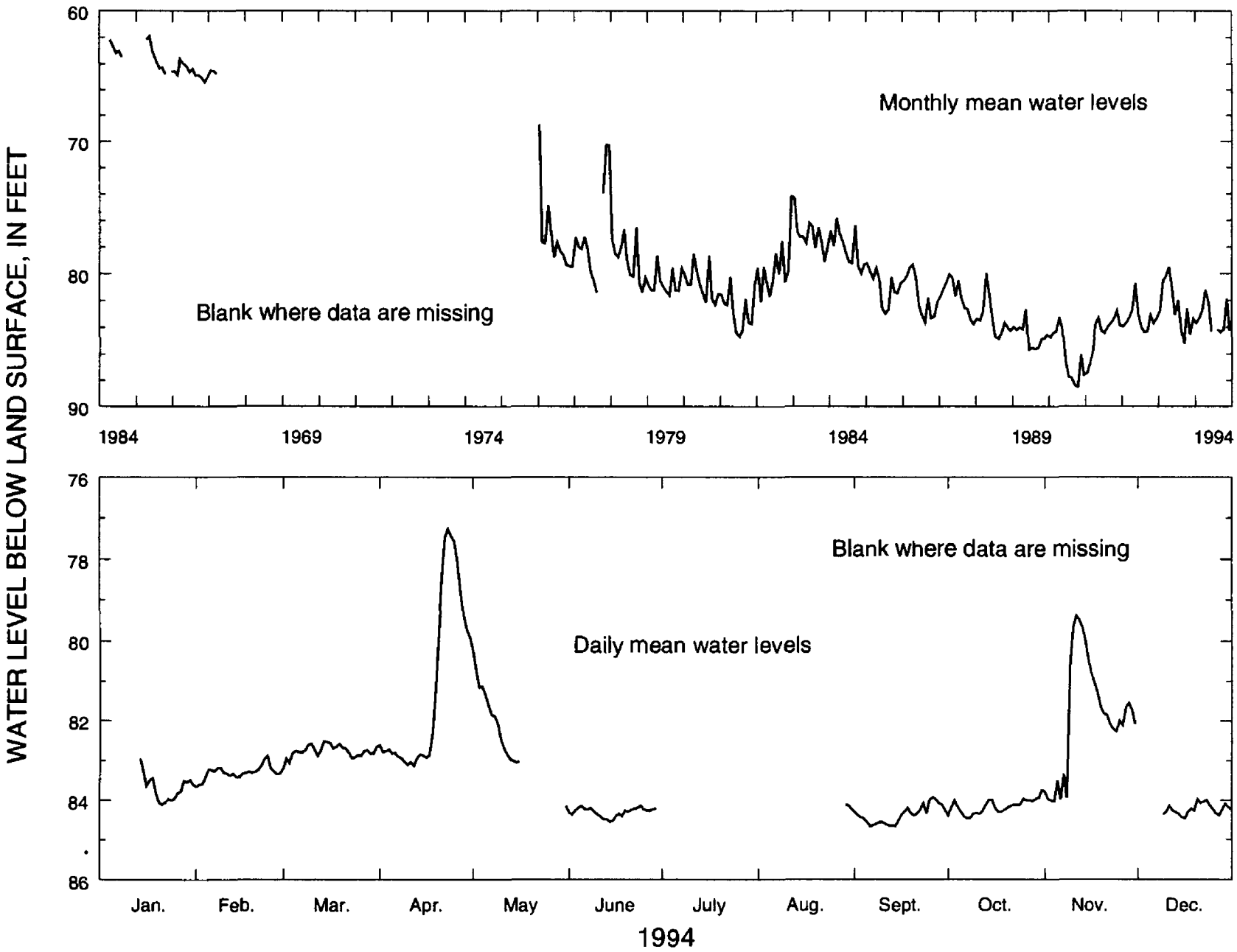
SUMMARY FOR 1994 HIGH 21.28 (Dec. 23, 1994) MEAN 22.68 LOW 25.06 (Apr. 26, 1994)

Figure 50.—Water level in observation well 35M013, McIntosh County.

Jesup-Doctortown subarea

The water level in the Upper Floridan aquifer in the Jesup-Doctortown subarea was monitored in three wells in 1994 (fig. 43) and data from these wells are summarized in figures 51-53. In this area, water levels in wells tapping the aquifer are affected mainly by industrial pumping at Doctortown, near Jesup. In 1994, partial industrial shutdowns, during which the major ground-water user temporarily ceased pumping, is indicated by sharp water-level rises on all three hydrographs. The 1994 mean water levels in the three wells (figs. 51-53) were from 0.6 to 0.8 ft lower than in 1993.

313701081543501 Local number, 30L003.
LOCATION.—Lat 31°37′01″, long 81°54′34″, Hydrologic Unit 03070106.
SITE NAME.—City of Jesup Housing Authority.
INSTRUMENTATION.—Analog recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 4 in., depth 584 ft, cased to 472 ft, open hole.
DATUM.—Altitude of land-surface datum is 107 ft.
REMARKS.—Water levels for periods, January 1-13, May 17-30, June 30 to August 28, and December 1-8, are missing.
PERIOD OF RECORD.—January 1964 to current year. Continuous record January 1964 to March 1967, and since January 1976.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 59.98 ft below land-surface datum, April 19, 1964; lowest, 88.91 ft below land-surface datum, October 7, 1990.

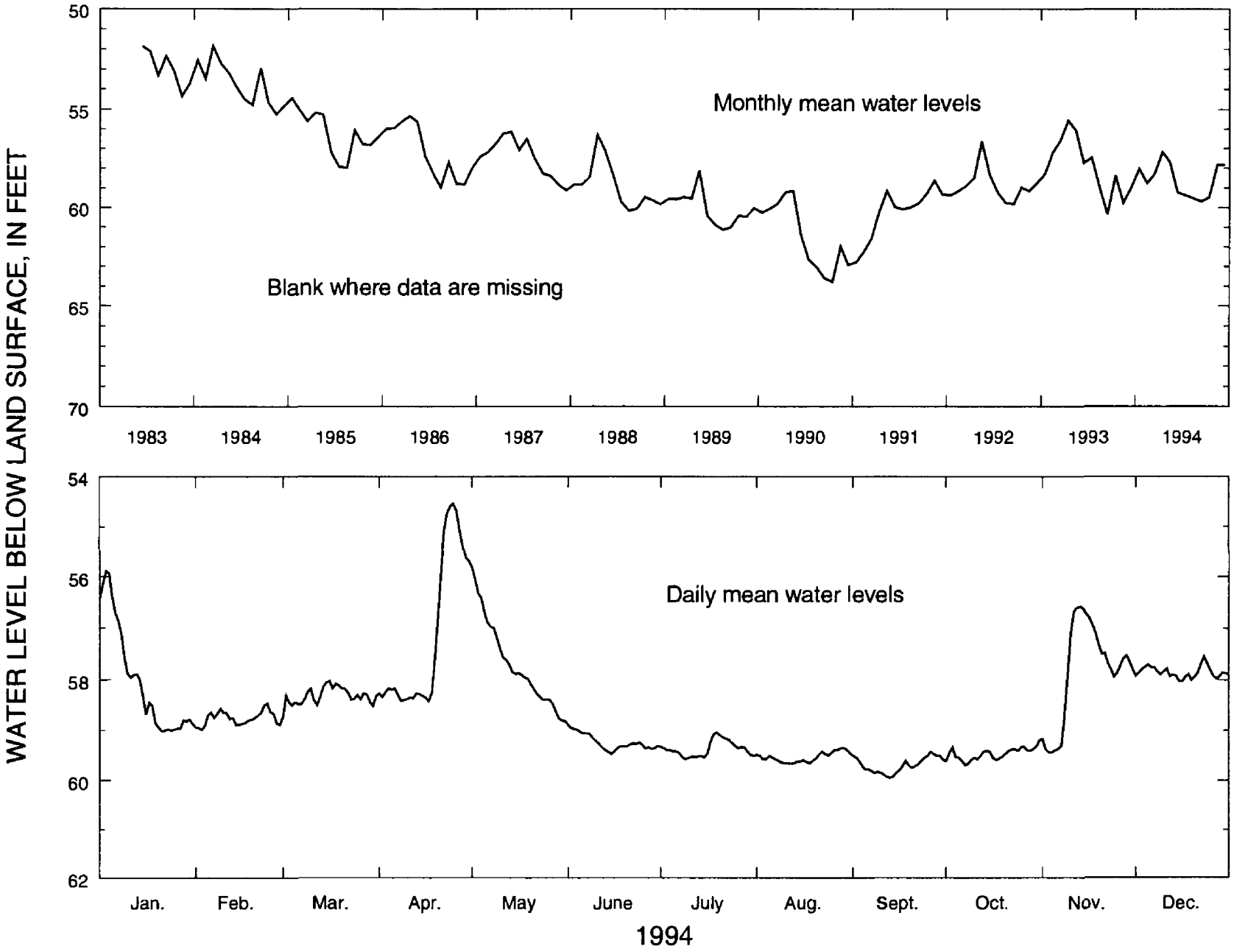


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	------	82.88	82.51	77.26	------	84.13	------	------	83.92	83.72	79.37	------
MEAN	------	83.30	82.76	81.21	------	84.30	------	------	84.37	84.16	81.87	------
LOW	------	83.65	83.19	83.12	------	84.54	------	------	84.67	84.46	84.02	------

SUMMARY FOR 1994 HIGH 77.26 (Apr. 23, 1994) MEAN 83.21 LOW 84.67 (Sept. 6, 1994)

Figure 51.—Water level in observation well 30L003, Wayne County.

313253081433502 Local number, 32L015.
LOCATION.—Lat 31°32′52″, long 81°43′36″, Hydrologic Unit 03070106.
SITE NAME.—Georgia Geologic Survey, Gardi, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 750 ft, cased to 545 ft, open hole.
DATUM.—Altitude of land-surface datum is 74 ft.
REMARKS.—None.
PERIOD OF RECORD.—June 1983 to current year. Continuous record since June 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 49.12 ft below land-surface datum, March 19, 1984; lowest, 64.05 ft below land-surface datum, October 7-8, 1990.

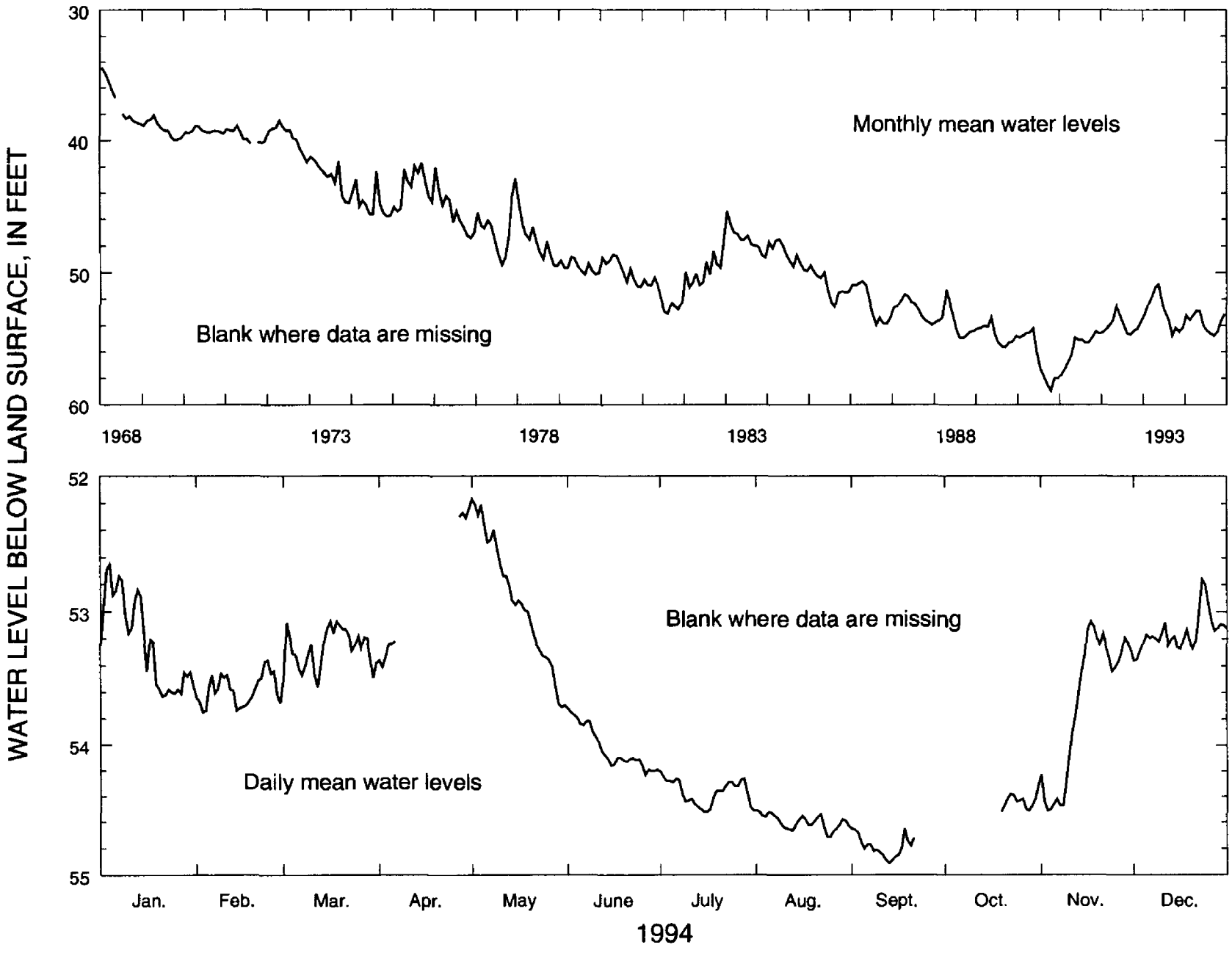


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	55.89	58.47	58.03	54.54	55.82	58.89	59.04	59.35	59.43	59.19	56.57	57.54
MEAN	58.02	58.75	58.32	57.17	57.69	59.24	59.37	59.54	59.69	59.47	57.83	57.85
LOW	59.01	58.99	58.71	58.42	58.81	59.47	59.57	59.66	59.94	59.69	59.44	58.03

SUMMARY FOR 1994 HIGH 54.54 (Apr. 25, 1994) MEAN 58.58 LOW 59.94 (Sept. 13, 1994)

Figure 52.—Water level in observation well 32L015, Wayne County.

313845081361701 Local number, 33M004.
LOCATION.—Lat 31°38′54″, long 81°36′04″, Hydrologic Unit 03070106.
SITE NAME.—U.S. Geological Survey, test well 3.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4-3 in., depth 872 ft, cased to 538 ft, open hole.
DATUM.—Altitude of land-surface datum is 61.2 ft.
REMARKS.—Water levels for periods, April 7-26 and September 22 to October 18, are missing.
PERIOD OF RECORD.—January 1968 to current year. Continuous record since January 1968.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 34.04 ft below land-surface datum, January 14, 1968; lowest, 59.00 ft below land-surface datum, October 8, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	52.65	53.36	53.07	------	52.17	53.72	54.21	54.51	------	------	53.07	52.76
MEAN	53.23	53.58	53.27	------	52.93	54.03	54.37	54.60	------	------	53.69	53.15
LOW	53.63	53.75	53.56	------	53.71	54.23	54.52	54.71	------	------	54.51	53.36

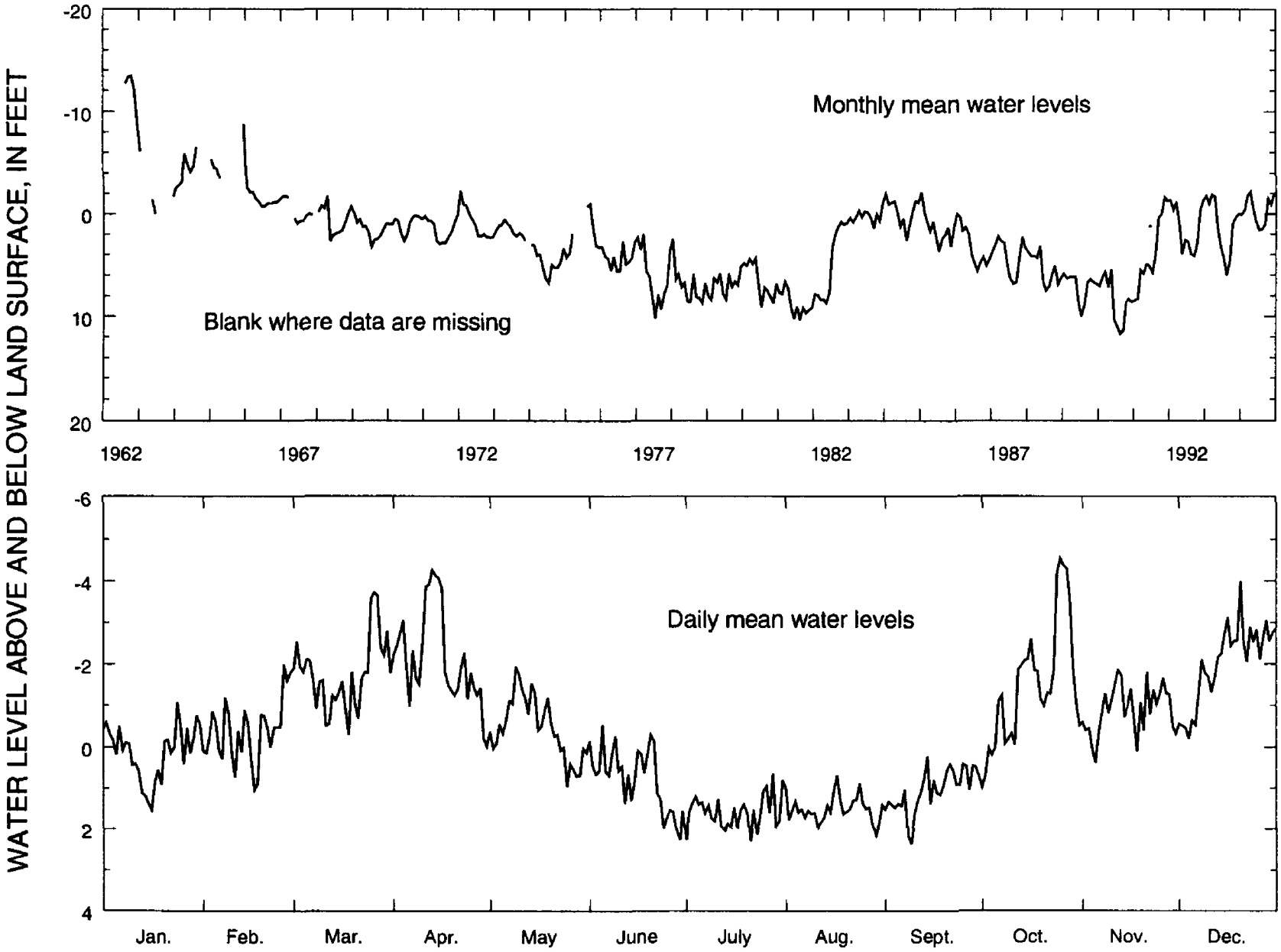
SUMMARY FOR 1994 HIGH 52.17 (May 1, 1994) MEAN 53.73 LOW 54.91 (Sept. 13, 1994)

Figure 53.—Water level in observation well 33M004, Long County.

Brunswick subarea

The water level in the Upper Floridan aquifer in the Brunswick subarea was monitored in six wells in 1994 and data from four of these wells (fig. 43) are summarized in this report. In this subarea, water levels in wells tapping this aquifer primarily are affected by industrial pumping. This pumping has resulted in the development of a cone of depression centered at Brunswick (Peck, 1991). The water-level response to pumping is illustrated in the hydrographs for wells 33H127 (fig. 54) and 34H403 (fig. 55) tapping the lower water-bearing zone of the Upper Floridan aquifer, and wells 33H133 (fig. 56) and 34H371 (fig. 57) tapping the upper water-bearing zone of the Upper Floridan aquifer. The annual mean water levels in wells 33H127 and 34H403 were 1.6 and 2.4 ft higher in 1994 than in 1993, respectively, and the annual mean water levels in wells 33H133 and 34H371 were 5.0 and 2.3 ft higher in 1994 than in 1993, respectively.

311007081301701 Local number, 33H127.
LOCATION.—Lat 31°10′06″, long 81°30′16″, Hydrologic Unit 03070203.
SITE NAME.—U.S. Geological Survey, test well 3.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer; lower water-bearing zone.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 1,002 ft, cased to 823 ft, open hole.
DATUM.—Altitude of land-surface datum is 6.2 ft.
REMARKS.—Well pumped and sampled for analysis of chloride concentration semi-annually.
PERIOD OF RECORD.—August 1962 to current year. Continuous record since August 1962.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 14.00 ft above land-surface datum, October 9, 1962; lowest, 13.22 ft below land-surface datum, July 9, 1990.



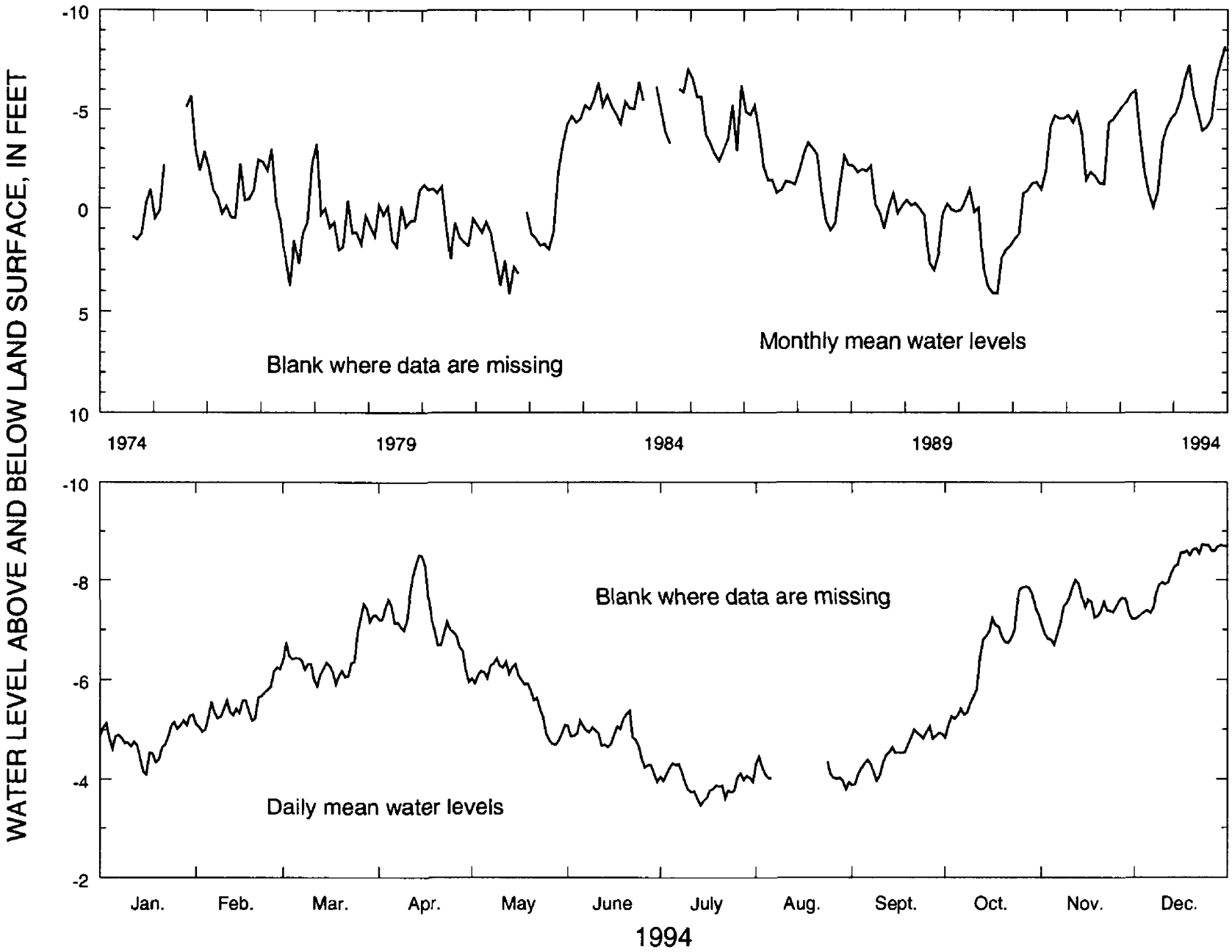
1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	-1.07	-1.99	-3.72	-4.26	-1.94	-0.53	0.64	0.69	0.23	-4.54	-1.87	-3.98
MEAN	0.12	-0.37	-1.75	-2.14	-0.47	0.77	1.59	1.51	1.06	-1.50	-0.90	-2.04
LOW	1.53	1.04	-0.29	-0.03	0.96	2.26	2.29	2.15	2.36	0.98	0.38	-0.20

SUMMARY FOR 1994 HIGH -4.54 (Oct. 25, 1994) MEAN -0.34 LOW 2.36 (Sept. 9, 1994)

[Negative value indicates water level above land surface]

Figure 54.—Water level in observation well 33H127, Glynn County.

310822081294201 Local number, 34H403.
LOCATION.—Lat 31°08′22″, long 81°29′42″, Hydrologic Unit 03070203.
SITE NAME.—U.S. Geological Survey, test well 24.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer; lower water-bearing zone.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 982 ft, cased to 788 ft, open hole.
DATUM.—Altitude of land-surface datum is 9.6 ft.
REMARKS.—Well pumped and sampled for analysis of chloride concentration semi-annually. Water levels for period, August 7-23, are missing.
PERIOD OF RECORD.—August 1974 to current year. Continuous record since August 1974.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 12.79 ft above land-surface datum, December 29, 1985; lowest, 4.76 ft below land-surface datum, September 14, 1990.



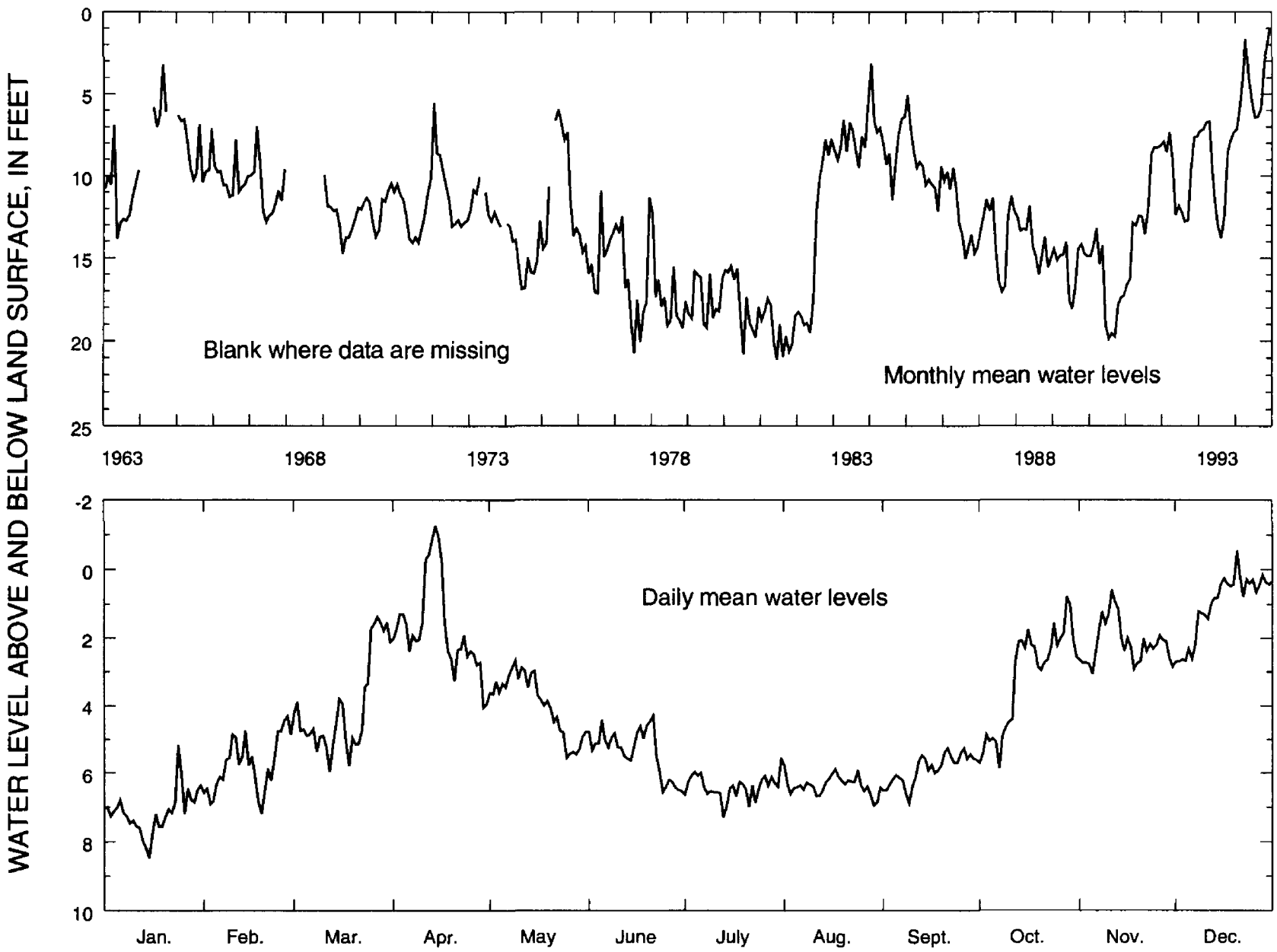
1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	-5.30	-6.25	-7.52	-8.51	-6.43	-5.38	-4.32	------	-5.06	-7.87	-8.00	-8.72
MEAN	-4.79	-5.48	-6.48	-7.25	-5.76	-4.80	-3.91	------	-4.54	-6.54	-7.39	-8.18
LOW	-4.10	-4.96	-5.87	-5.96	-4.70	-3.95	-3.46	------	-3.88	-4.84	-6.70	-7.22

SUMMARY FOR 1994 HIGH -8.72 (Dec. 23, 1994) MEAN -5.85 LOW -3.46 (July 14, 1994)

[Negative value indicates water level above land surface]

Figure 55.—Water level in observation well 34H403, Glynn County.

311007081301702 Local number, 33H133.
LOCATION.—Lat 31°10′08″, long 81°30′16″, Hydrologic Unit 03070203.
SITE NAME.—U.S. Geological Survey, test well 6.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer; upper water-bearing zone.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 790 ft, cased to 520 ft, open hole.
DATUM.—Altitude of land-surface datum is 6.7 ft.
REMARKS.—Well pumped and sampled for analysis of chloride concentration semi-annually.
PERIOD OF RECORD.—January 1963 to current year. Continuous record since January 1963.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 9.07 ft above land-surface datum, December 26, 1965; lowest, 21.87 ft below land-surface datum, July 22, 1977.



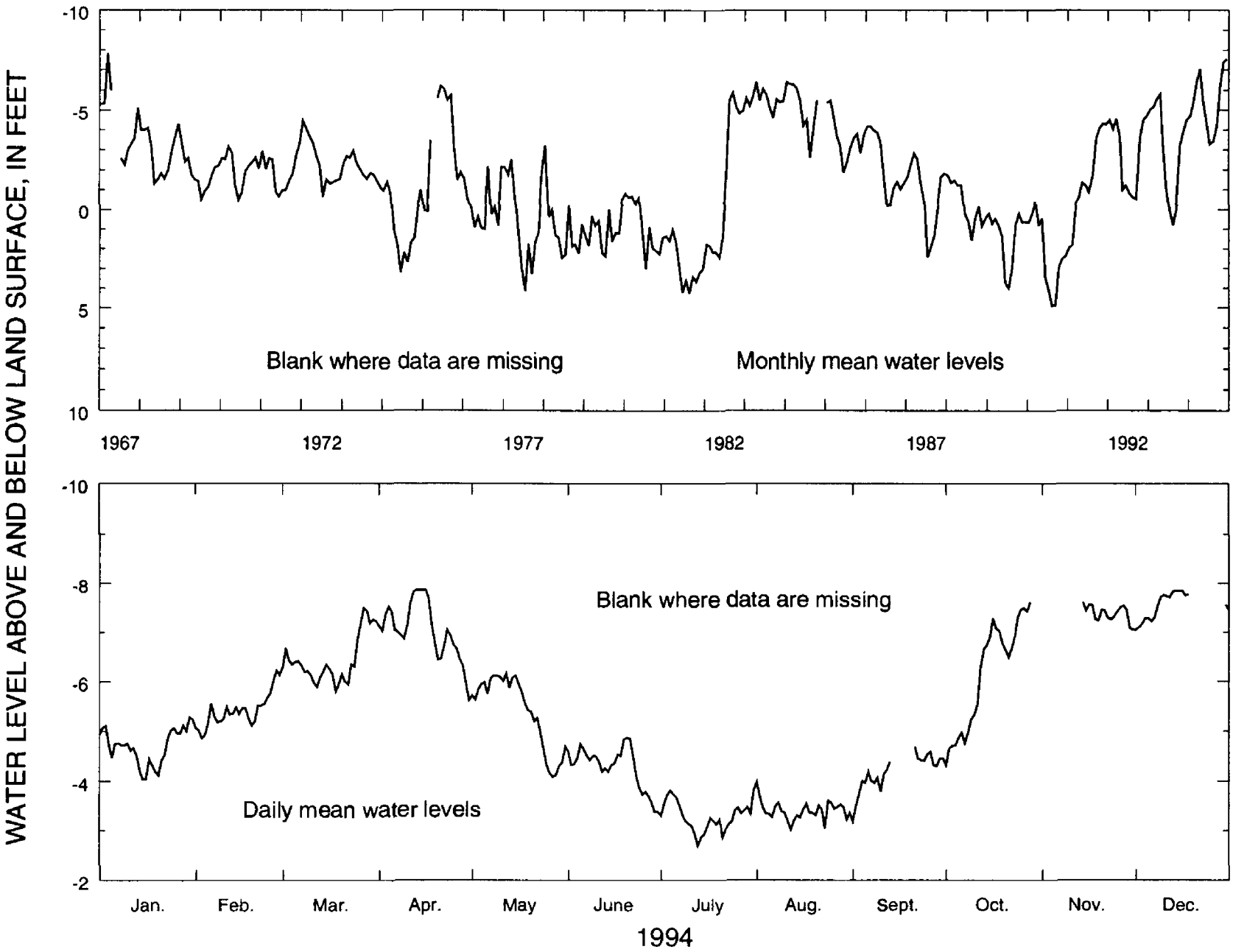
1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	5.17	4.31	1.37	-1.27	2.66	4.31	5.55	5.77	5.26	0.78	0.58	-0.56
MEAN	7.13	5.75	4.03	1.70	3.96	5.38	6.42	6.36	5.88	3.17	2.15	1.01
LOW	8.47	7.19	5.95	4.06	5.56	6.56	7.30	6.95	6.88	5.88	3.07	2.70

SUMMARY FOR 1994 HIGH -1.27 (Apr. 14, 1994) MEAN 4.41 LOW 8.47 (Jan. 15, 1994)

[Negative value indicates water level above land surface]

Figure 56.—Water level in observation well 33H133, Glynn County.

310818081293701 Local number, 34H371.
LOCATION.—Lat 31°08′18″, long 81°30′16″, Hydrologic Unit 03070203.
SITE NAME.—U.S. Geological Survey, test well 11.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer; upper water-bearing zone.
WELL CHARACTERISTICS.—Drilled observation well, diameter 3-2 in., depth 719 ft, cased to 512 ft, open hole.
DATUM.—Altitude of land-surface datum is 9.8 ft.
REMARKS.—Well pumped and sampled for analysis of chloride concentration semi-annually. Water levels for periods, September 14-20, October 29 to November 13, and December 19-29, are missing.
PERIOD OF RECORD.—January 1967 to current year. Continuous record since January 1967.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 9.95 ft above land-surface datum, March 18-19, 1967; lowest, 5.64 ft below land-surface datum, September 14, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	-5.28	-6.22	-7.49	-7.87	-6.16	-4.87	-3.82	-3.99	------	-7.60	------	------
MEAN	-4.70	-5.41	-6.43	-7.04	-5.41	-4.29	-3.29	-3.41	------	-6.17	------	------
LOW	-4.04	-4.86	-5.81	-5.63	-4.09	-3.38	-2.70	-3.02	------	-4.32	------	------

SUMMARY FOR 1994 HIGH -7.87 (Apr. 14, 1994) MEAN -5.31 LOW -2.70 (July 13, 1994)

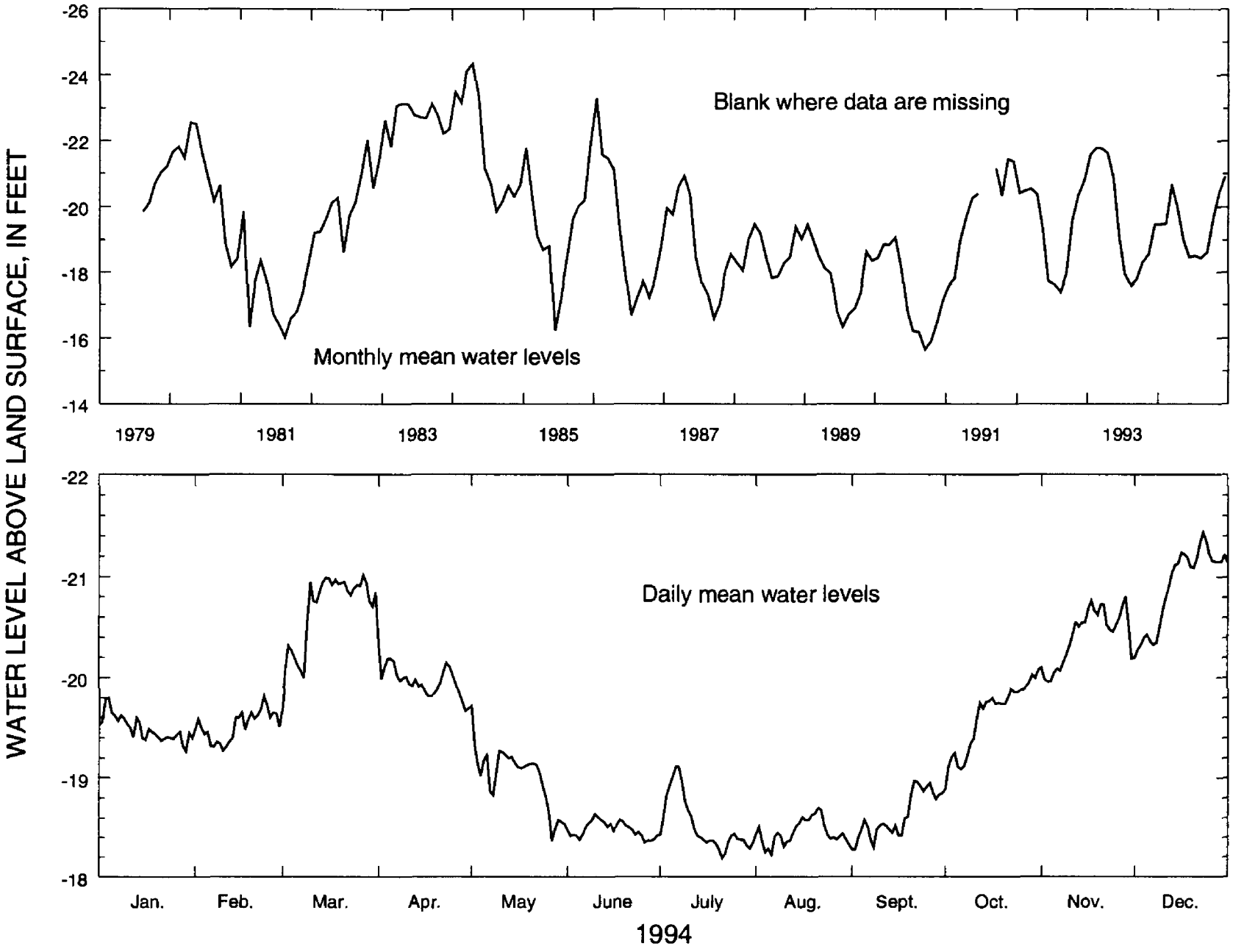
[Negative value indicates water level above land surface]

Figure 57.—Water level in observation well 34H371, Glynn County.

St Marys-Okefenokee Swamp subarea

The water level in the Upper Floridan aquifer in the St Marys-Okefenokee Swamp subarea (fig. 43) is monitored in two wells, which are summarized in figures 58-59. Water levels in wells tapping the aquifer in this subarea are affected by industrial pumping. The 1994 mean water levels in well 33E027 (fig. 58) at Kings Bay and well 27E004 (fig. 59) in western Charlton County were 0.2 and 0.4 ft higher than in 1993, respectively.

304756081311101 Local number, 33E027.
LOCATION.—Lat 30°47′56″, long 81°31′11″, Hydrologic Unit 03070203.
SITE NAME.—U.S. Navy, Kings Bay, test well 1.
INSTRUMENTATION.—Electronic data recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled test well, diameter 8 in., depth 1,306 ft, cased to 555 ft, backfilled to 990 ft, open hole.
DATUM.—Altitude of land-surface datum is 10.0 ft.
REMARKS.—None.
PERIOD OF RECORD.—August 1979 to current year. Continuous record since August 1979.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 24.71 ft above land-surface datum, March 28, 1984, and March 17, 1983; lowest, 13.90 ft above land-surface datum, June 10-11, 1985.



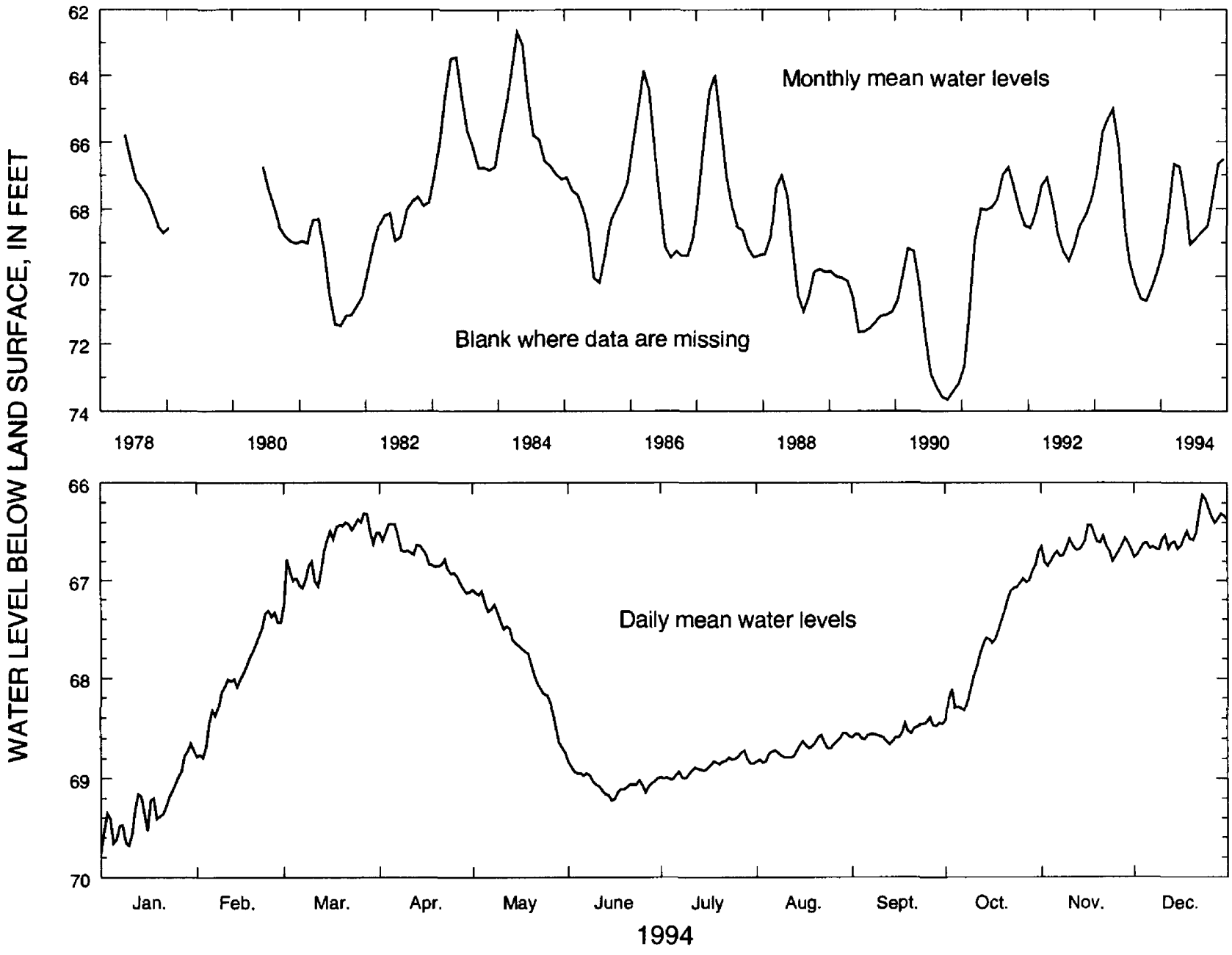
1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	-19.80	-19.82	-21.02	-20.34	-19.72	-18.64	-19.11	-18.70	-18.97	-20.08	-20.81	-21.44
MEAN	-19.49	-19.52	-20.68	-19.97	-19.02	-18.48	-18.52	-18.45	-18.62	-19.62	-20.42	-20.91
LOW	-19.27	-19.27	-19.70	-19.67	-18.37	-18.35	-18.19	-18.23	-18.28	-18.89	-19.96	-20.20

SUMMARY FOR 1994 HIGH -21.44 (Dec. 23, 1994) MEAN -19.48 LOW -18.19 (July 21, 1994)

[Negative value indicates water level above land surface]

Figure 58.—Water level in observation well 33E027, Camden County.

304942082213801 Local number, 27E004.
LOCATION.—Lat 30°49′43″, long 82°21′38″, Hydrologic Unit 03110201.
SITE NAME.—U.S. Geological Survey, test well OK-9.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Upper Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 700 ft, cased to 498 ft, open hole.
DATUM.—Altitude of land-surface datum is 116 ft.
REMARKS.—Well drilled in May 1978 to replace USGS test well OK-8 (27E002).
PERIOD OF RECORD.—May 1978 to current year. Continuous record since June 1980.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 62.30 ft below land-surface datum, May 9, 1984; lowest, 73.91 ft below land-surface datum, October 7-8, 1990.



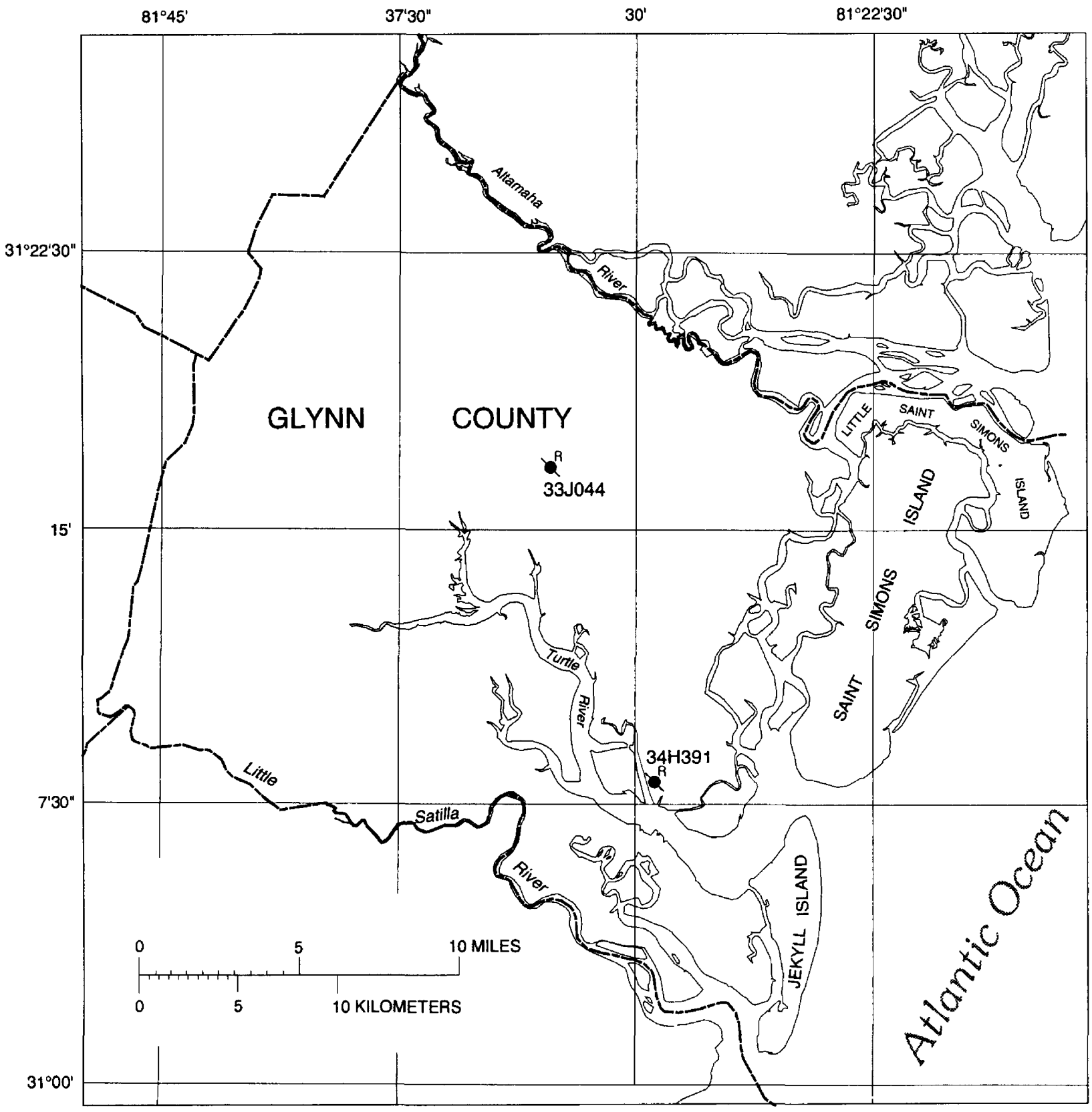
1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	68.65	67.31	66.31	66.42	67.10	68.83	68.72	68.55	68.39	66.70	66.43	66.12
MEAN	69.28	67.97	66.68	66.76	67.76	69.05	68.89	68.70	68.54	67.59	66.66	66.52
LOW	69.75	68.79	67.24	67.13	68.74	69.22	69.01	68.84	68.66	68.42	66.85	66.76

SUMMARY FOR 1994 HIGH 66.12 (Dec. 23, 1994) MEAN 67.86 LOW 69.75 (Jan. 1, 1994)

Figure 59.—Water level in observation well 27E004, Charlton County.

Lower Floridan aquifer in the Brunswick area

The water level in the Lower Floridan aquifer was monitored in five wells in the Brunswick area in 1994; data from two of these wells (fig. 60) are summarized in figures 61-62. Water levels in wells tapping the Lower Floridan aquifer in this area are mainly influenced by withdrawal from the Upper Floridan aquifer. The hydrographs of these wells are similar to those of the Upper Floridan aquifer (figs. 54-57). The 1994 mean water levels in wells 34H391 and 33J044 were 2.5 and 1.8 ft higher than in 1993, respectively. A record-high daily mean water level was recorded in well 33J044 (fig. 62) that was 0.6 ft higher than the previous record high.



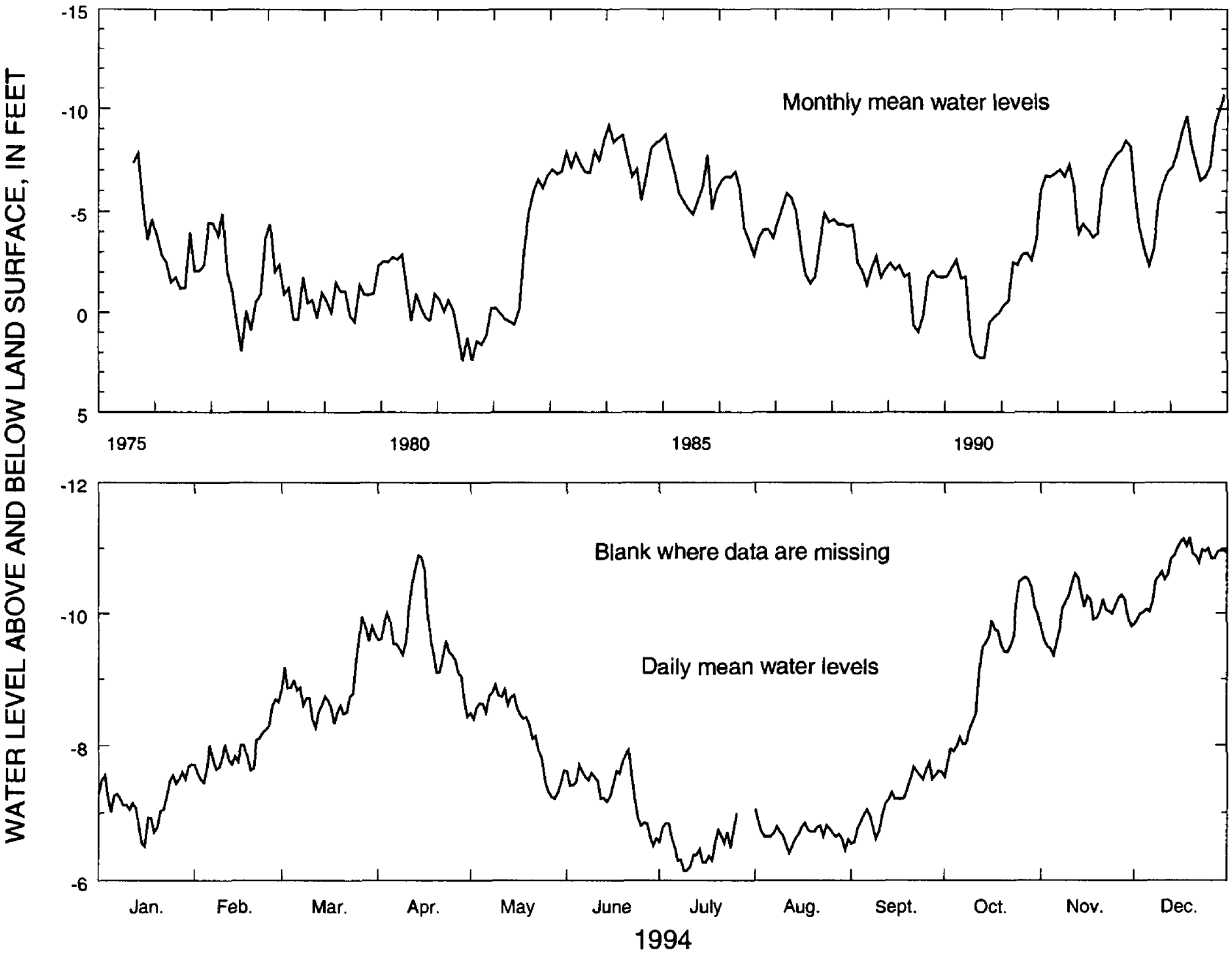
Base from U.S. Geological Survey digital data, 1:100,000, 1981
Universal Transverse Mercator projection, Zone 17

EXPLANATION

34H391 (R) OBSERVATION WELL AND IDENTIFICATION NUMBER—Equipped with a recorder

Figure 60.—Locations of observation wells completed in the Lower Floridan aquifer.

310818081294201 Local number, 34H391.
LOCATION.—Lat 31°08′18″, long 81°29′42″, Hydrologic Unit 03070203.
SITE NAME.—U.S. Geological Survey, test well 16.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Lower Floridan aquifer.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 1,150 ft, cased to 1,070 ft, open hole.
DATUM.—Altitude of land-surface datum is 7.13 ft.
REMARKS.—Well pumped and sampled for analysis of chloride concentration semi-annually. Water levels for period, July 27-31, are missing.
PERIOD OF RECORD.—August 1975 to current year. Continuous record since August 1975.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 11.65 ft above land-surface datum, October 13-14, 1985; lowest, 2.96 ft below land-surface datum, July 27, 1977.



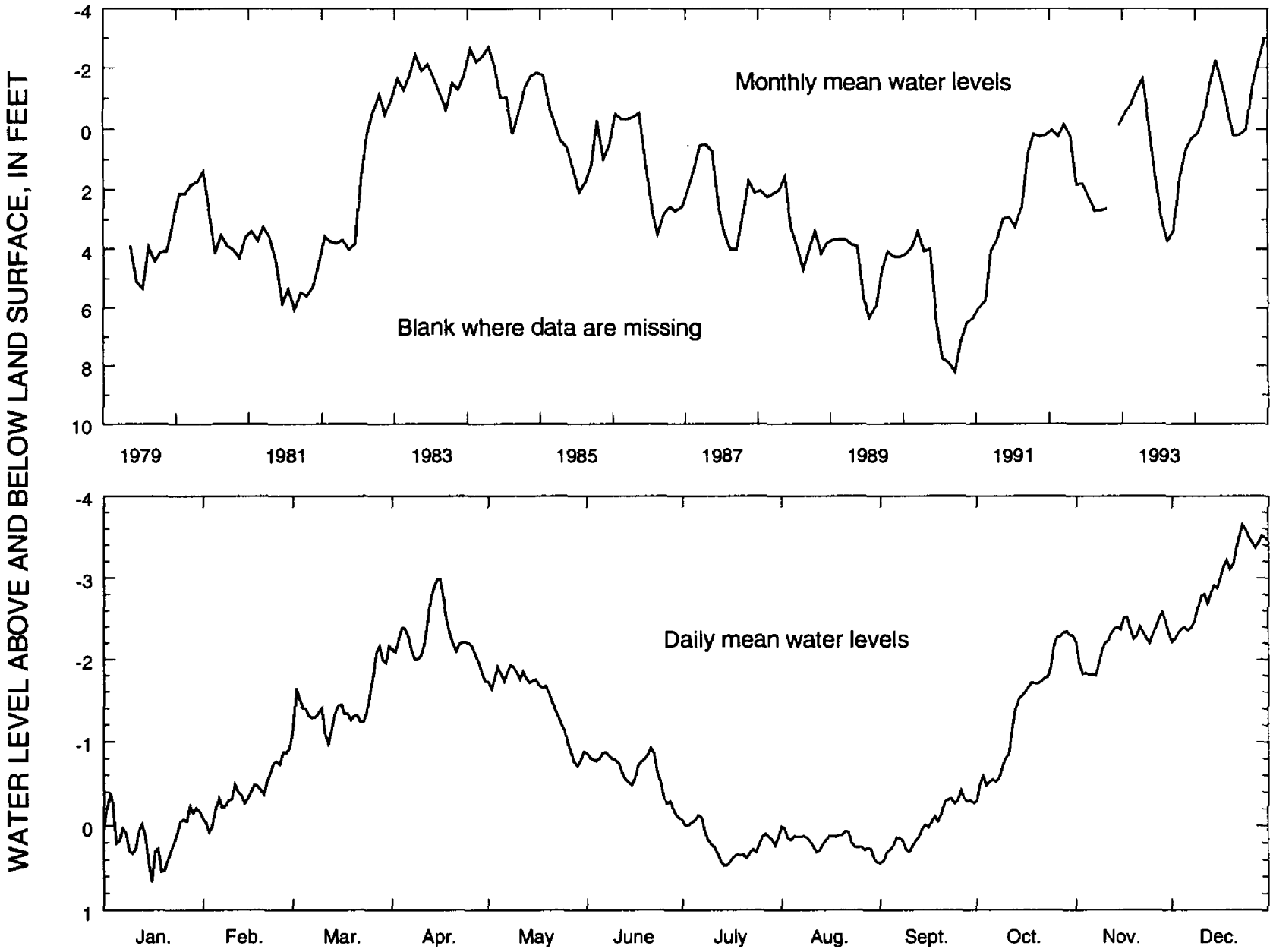
1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	-7.72	-8.69	-9.95	-10.90	-8.91	-7.93	-7.00	-7.05	-7.74	-10.56	-10.62	-11.17
MEAN	-7.19	-7.93	-8.90	-9.65	-8.25	-7.33	-6.51	-6.70	-7.20	-9.22	-10.03	-10.68
LOW	-6.51	-7.45	-8.27	-8.43	-7.21	-6.52	-6.13	-6.41	-6.55	-7.53	-9.36	-9.84

SUMMARY FOR 1994 HIGH -11.17 (Dec. 19, 1994) MEAN -8.32 LOW -6.13 (July 9, 1994)

[Negative value indicates water level above land surface]

Figure 61.—Water level in observation well 34H391, Glynn County.

311633081324001 Local number, 33J044.
LOCATION.—Lat 31°16′33″, long 81°32′40″, Hydrologic Unit 03070203.
SITE NAME.—Georgia Pacific Company, U.S. Geological Survey, test well 27.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Lower Floridan aquifer.
WELL CHARACTERISTICS.—Drilled unused oil-test well converted to observation well, diameter 9 in., depth 2,260 ft, cased to 1,079 ft, open hole.
DATUM.—Altitude of land-surface datum is 20 ft.
REMARKS.—This is the Sterling oil-test well.
PERIOD OF RECORD.—May 1979 to current year. Continuous record since May 1979.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 3.65 ft above land-surface datum, December 23, 1994; lowest, 8.44 ft below land-surface datum, September 19, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	-0.39	-0.92	-2.17	-2.98	-1.93	-0.93	-0.12	0.01	-0.42	-2.35	-2.56	-3.65
MEAN	0.12	-0.41	-1.46	-2.28	-1.51	-0.63	0.20	0.18	0.00	-1.40	-2.23	-2.98
LOW	0.66	0.06	-0.98	-1.73	-0.71	-0.09	0.47	0.43	0.44	-0.29	-1.60	-2.22

SUMMARY FOR 1994 HIGH -3.65 (Dec. 23, 1994) MEAN -1.04 LOW 0.66 (Jan. 16, 1994)

[Negative value indicates water level above land surface]

Figure 62.—Water level in observation well 33J044, Glynn County.

Claiborne Aquifer

The water level in the Claiborne aquifer was monitored in 21 wells in 1994 and data from eight of these wells (fig. 63) are summarized in figures 64-71. The water level in the aquifer is affected mainly by precipitation and by local and regional pumping (Hicks and others, 1981). The water level generally is highest following the winter and spring rainy seasons, and lowest in the fall following the summer irrigation season. The annual mean water levels in seven of the eight wells were higher in 1994 than in 1993 (figs. 64-71). The water level in several wells increased in early July, coinciding with rainfall and flooding associated with Tropical Storm Alberto (Hicks, 1995). Water levels in the eight wells ranged from 1.0 ft lower to 5.9 ft higher in 1994 than in 1993. A record high daily mean water level was recorded in well 06K010 (fig. 64) and well 14P015 (fig. 71) that were 0.3 and 1.8 ft higher than the previous record highs, respectively.

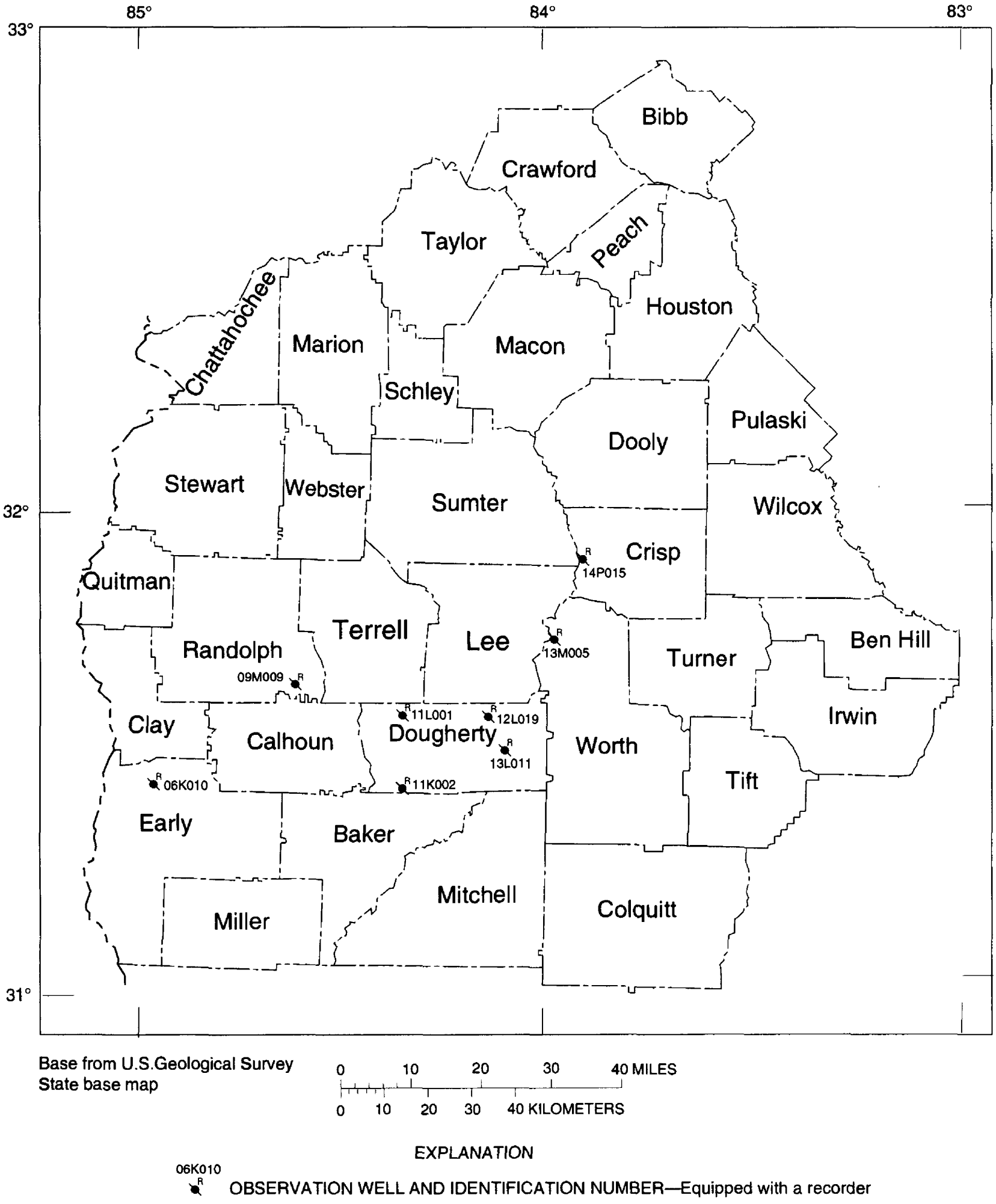
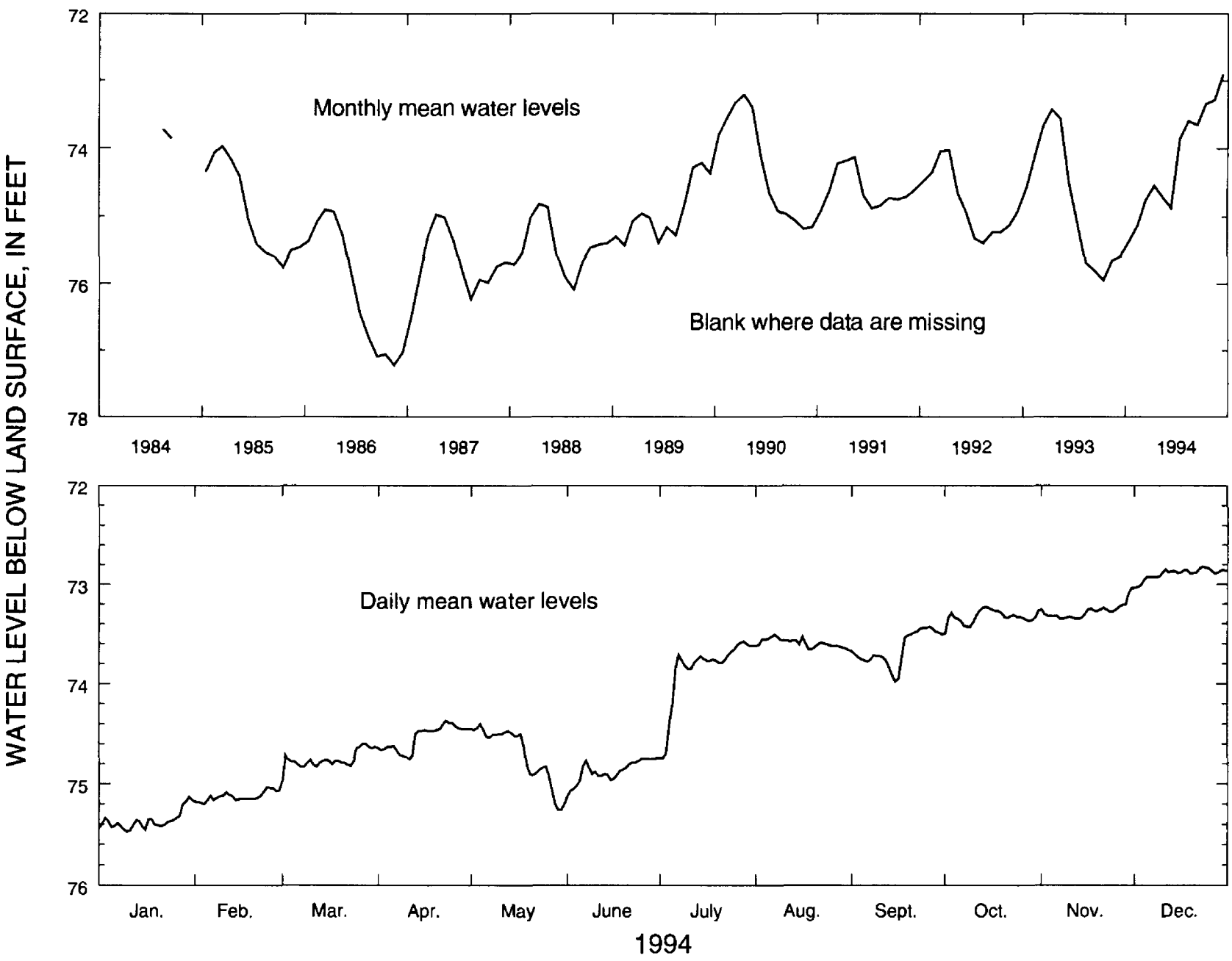


Figure 63.—Locations of observation wells completed in the Claiborne aquifer.

312827084551503 Local number, 06K010.
LOCATION.—Lat 31°28′24″, long 84°55′09″, Hydrologic Unit 03130004.
SITE NAME.—Georgia Geologic Survey, Kolomoki Mounds State Park, test well 3.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 140 ft, cased to 120 ft, screen to 140 ft.
DATUM.—Altitude of land-surface datum is 310 ft.
REMARKS.—None.
PERIOD OF RECORD.—August 1984 to current year. Continuous record since January 1985.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 72.82 ft below land-surface datum, December 23, 1994; lowest, 77.35 ft below land-surface datum, November 14, 1986.

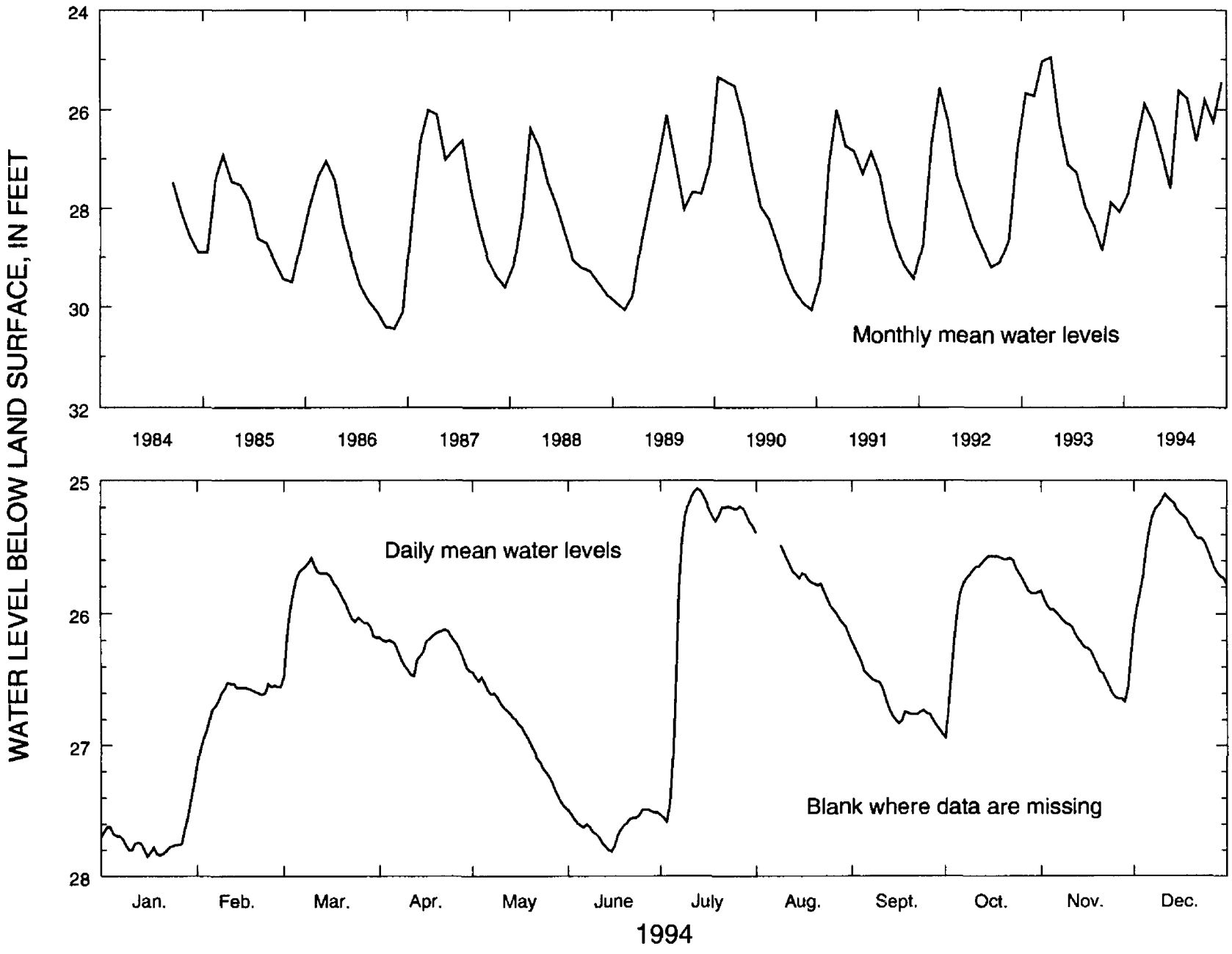


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	75.13	75.03	74.60	74.37	74.40	74.74	73.58	73.51	73.43	73.23	73.04	72.82
MEAN	75.37	75.13	74.76	74.54	74.71	74.87	73.86	73.59	73.65	73.33	73.28	72.90
LOW	75.47	75.20	74.96	74.75	75.26	75.12	74.74	73.67	73.98	73.50	73.35	73.04

SUMMARY FOR 1994 HIGH 72.82 (Dec. 23, 1994) MEAN 74.16 LOW 75.47 (Jan. 10, 1994)

Figure 64.—Water level in observation well 06K010, Early County.

313953084361201 Local number, 09M009.
LOCATION.—Lat 31°39′52″, long 84°36′10″, Hydrologic Unit 03130009.
SITE NAME.—C.T. Martin, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 94 ft, cased to 77 ft, screen to 94 ft.
DATUM.—Altitude of land-surface datum is 322 ft.
REMARKS.—Water levels for period, August 2-8, are missing.
PERIOD OF RECORD.—September 1984 to current year. Continuous record since September 1984.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 24.30 ft below land-surface datum, April 1, 1993; lowest, 30.50 ft below land-surface datum, November 3, 1986.

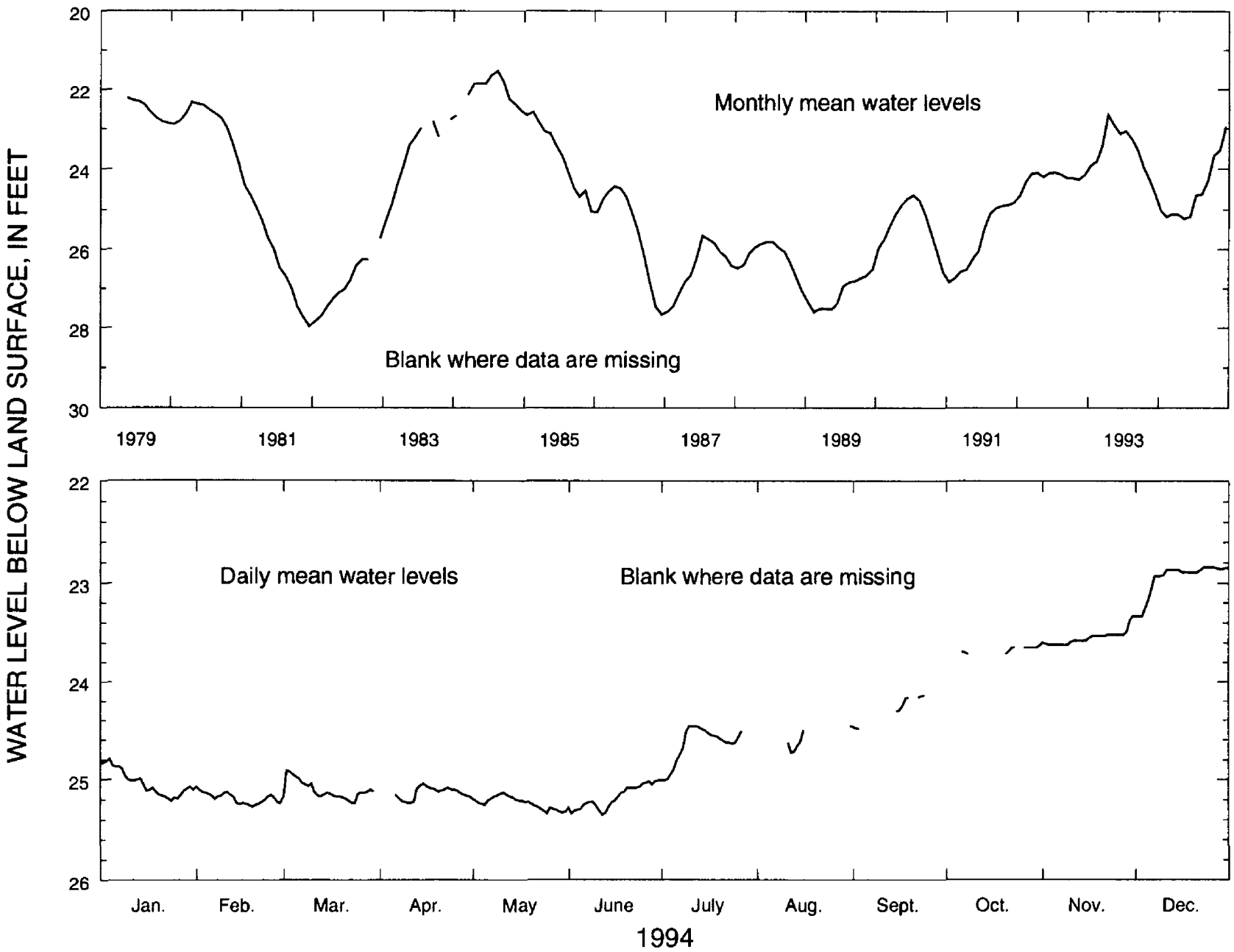


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	27.30	26.52	25.58	26.12	26.44	27.49	25.06	------	26.21	25.57	25.83	25.10
MEAN	27.72	26.65	25.89	26.26	26.89	27.61	25.63	------	26.65	25.81	26.26	25.45
LOW	27.85	27.16	26.47	26.47	27.47	27.81	27.58	------	26.91	26.94	26.66	26.09

SUMMARY FOR 1994 HIGH 25.06 (July 13, 1994) MEAN 26.39 LOW 27.85 (Jan. 16, 1994)

Figure 65.—Water level in observation well 09M009, Randolph County.

312654084210102 Local number, 11K002.
LOCATION.—Lat 31°26′54″, long 84°21′01″, Hydrologic Unit 03130008.
SITE NAME.—U.S. Geological Survey, test well 11.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 320 ft, cased to 300 ft, screen to 320 ft.
DATUM.—Altitude of land-surface datum is 183.5 ft.
REMARKS.—Water levels for periods, March 31 to April 5, July 28 to August 10, August 17-30, September 4-7, 9-14, 20-21, 25 to October 5, 9-19, and October 24-25, are missing.
PERIOD OF RECORD.—May 1979 to current year. Continuous record since May 1979.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 22.11 ft below land-surface datum, June 1, 1979; lowest, 28.04 ft below land-surface datum, December 24, 1981.

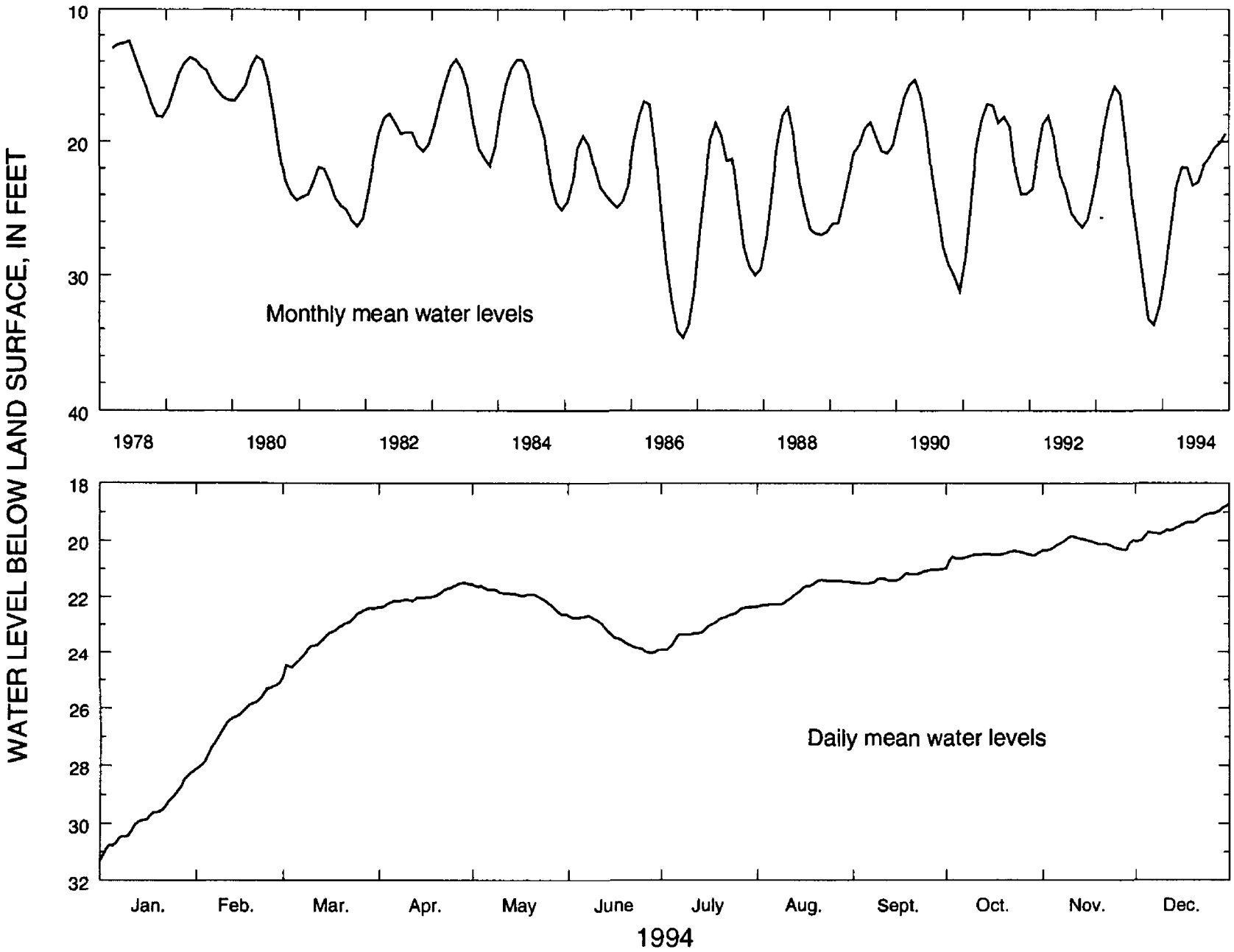


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	24.79	25.07	24.91	25.04	25.13	25.01	24.46	------	------	------	23.33	22.84
MEAN	25.03	25.18	25.11	25.13	25.23	25.18	24.65	------	------	------	23.55	22.95
LOW	25.21	25.27	25.23	25.23	25.34	25.35	25.01	------	------	------	23.62	23.33

SUMMARY FOR 1994 HIGH 22.84 (Dec. 23, 1994) MEAN 24.59 LOW 25.35 (June 12, 1994)

Figure 66.—Water level in observation well 11K002, Dougherty County.

313530084203202 Local number, 11L001.
LOCATION.—Lat 31°35′30″, long 84°20′34″, Hydrologic Unit 03130008.
SITE NAME.—U.S. Geological Survey, test well 4.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 251 ft, cased to 233 ft, screen to 251 ft.
DATUM.—Altitude of land-surface datum is 220 ft.
REMARKS.—None.
PERIOD OF RECORD.—March 1978 to current year. Continuous record since March 1978.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 12.11 ft below land-surface datum, June 5-6, 1978; lowest, 34.75 ft below land-surface datum, October 19-20, 1986.

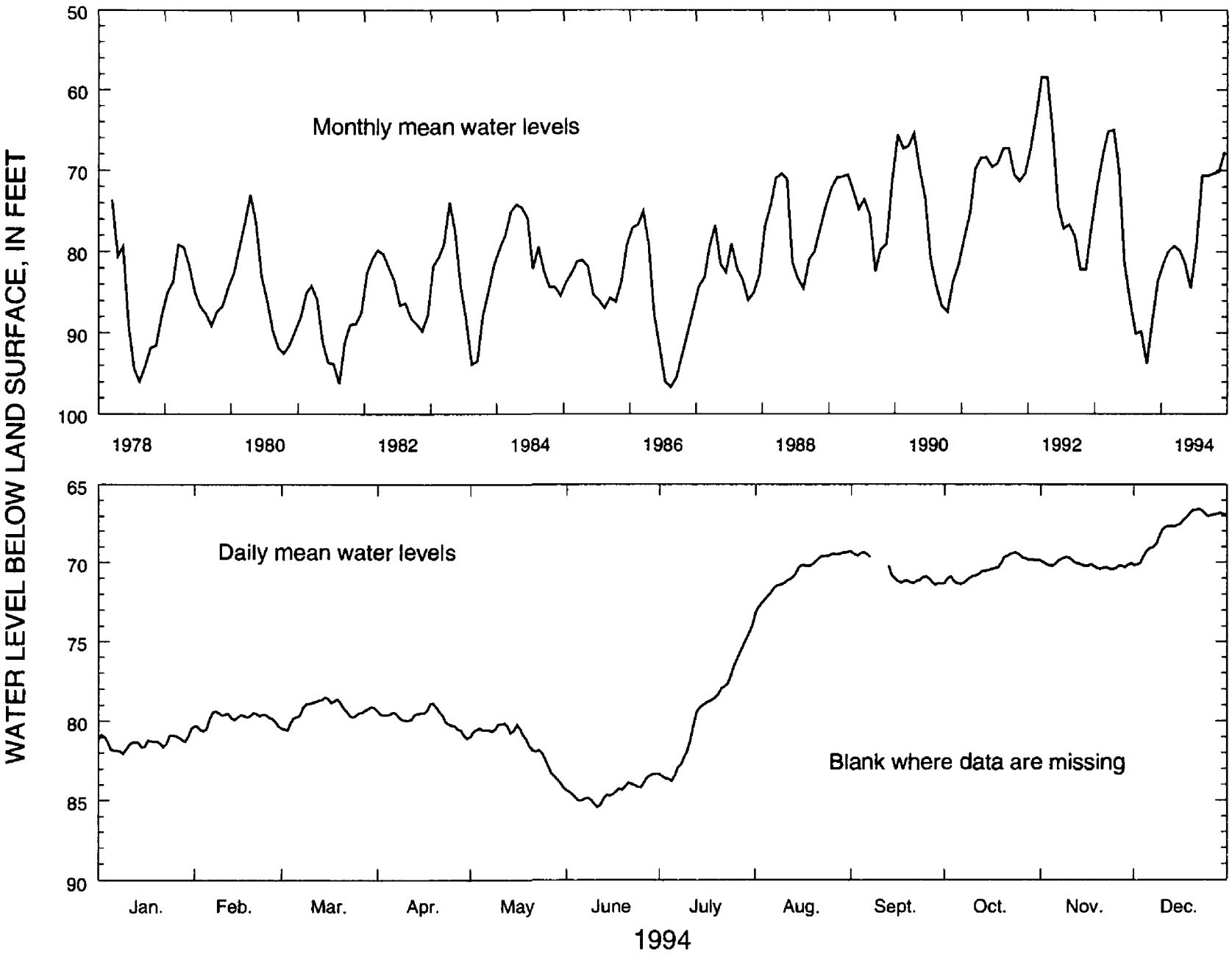


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	28.19	25.11	22.40	21.49	21.55	22.66	22.37	21.39	21.00	20.36	19.82	18.74
MEAN	29.77	26.38	23.42	21.96	21.97	23.33	23.07	21.82	21.28	20.51	20.10	19.41
LOW	31.28	28.10	24.91	22.38	22.64	24.03	23.92	22.36	21.51	20.98	20.34	20.01

SUMMARY FOR 1994 HIGH 18.74 (Dec. 31, 1994) MEAN 22.73 LOW 31.28 (Jan. 1, 1994)

Figure 67.—Water level in observation well 11L001, Dougherty County.

313534084103001 Local number, 12L019.
LOCATION.—Lat 31°35′36″, long 84°10′30″, Hydrologic Unit 03130008.
SITE NAME.—U.S. Geological Survey, test well 5.
INSTRUMENTATION.—Electronic data recorder.
AQUIFER.—Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 257 ft, cased to 241 ft, screen to 257 ft.
DATUM.—Altitude of land-surface datum is 198 ft.
REMARKS.—Water levels for period, September 8-12, are missing.
PERIOD OF RECORD.—March 1978 to current year. Continuous record since March 1978.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 57.31 ft below land-surface datum, April 7, 1992; lowest, 99.53 ft below land-surface datum, August 1-2, 1978.

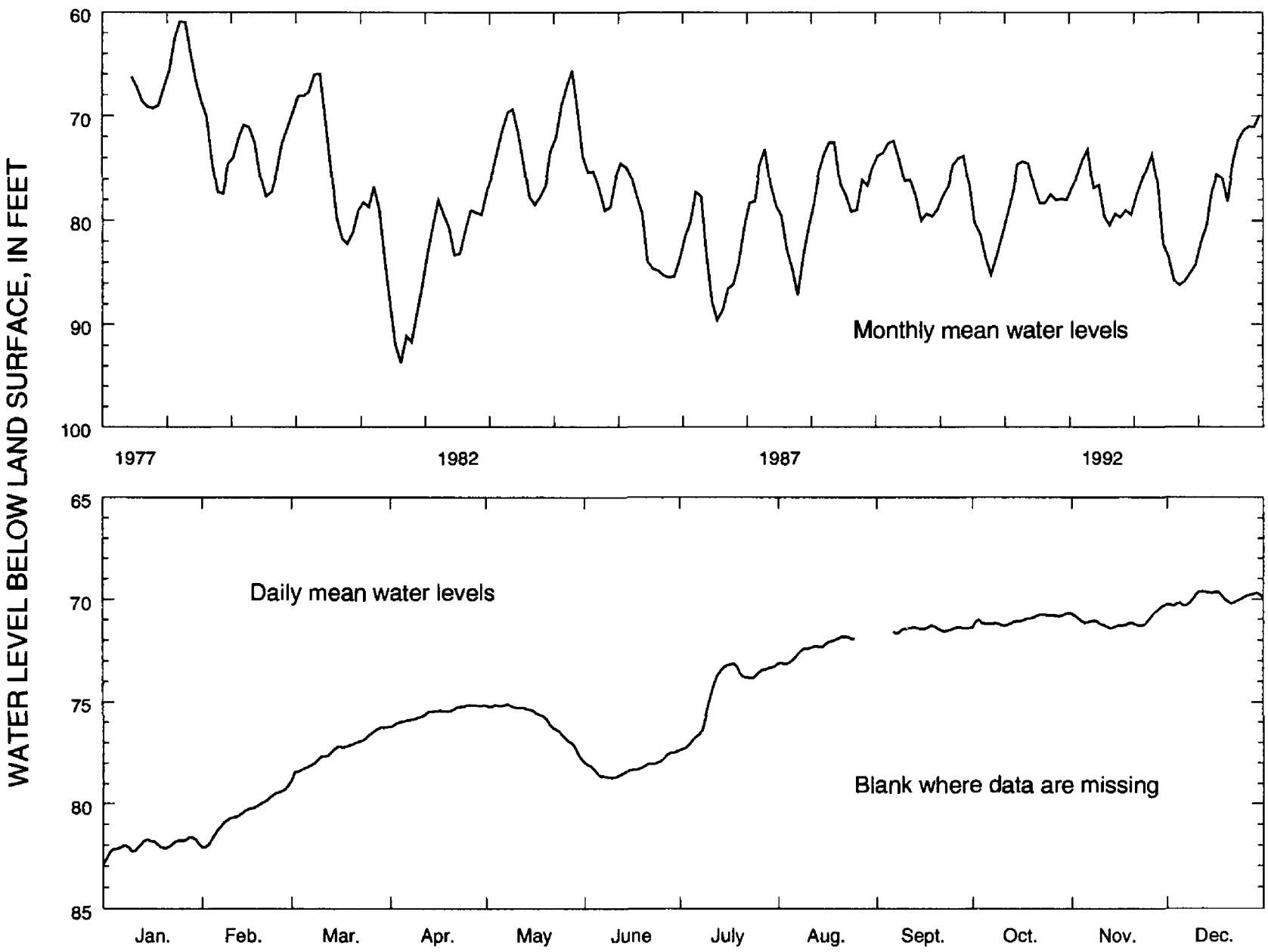


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	80.46	79.39	78.51	78.88	80.17	83.33	73.94	69.34	69.33	69.41	69.69	66.58
MEAN	81.33	79.84	79.29	79.78	81.40	84.43	79.39	70.68	70.66	70.39	70.15	67.78
LOW	82.03	80.62	80.59	81.09	84.20	85.43	83.76	73.20	71.44	71.38	70.43	70.18

SUMMARY FOR 1994 HIGH 66.58 (Dec. 22, 1994) MEAN 76.31 LOW 85.43 (June 11, 1994)

Figure 68.—Water level in observation well 12L019, Dougherty County.

313105084064301 Local number, 13L011.
LOCATION.—Lat 31°31′05″, long 84°06′43″, Hydrologic Unit 03130008.
SITE NAME.—U.S. Geological Survey, test well 2.
INSTRUMENTATION.—Electronic data recorder.
AQUIFER.—Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 418 ft, cased to 398 ft, screen to 418 ft.
DATUM.—Altitude of land-surface datum is 195 ft.
REMARKS.—Water levels for period, August 26 to September 5, are missing.
PERIOD OF RECORD.—June 1977 to current year. Continuous record since June 1977.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 60.01 ft below land-surface datum, April 5, 1978; lowest, 95.00 ft below land-surface datum, August 9-11, 1981.

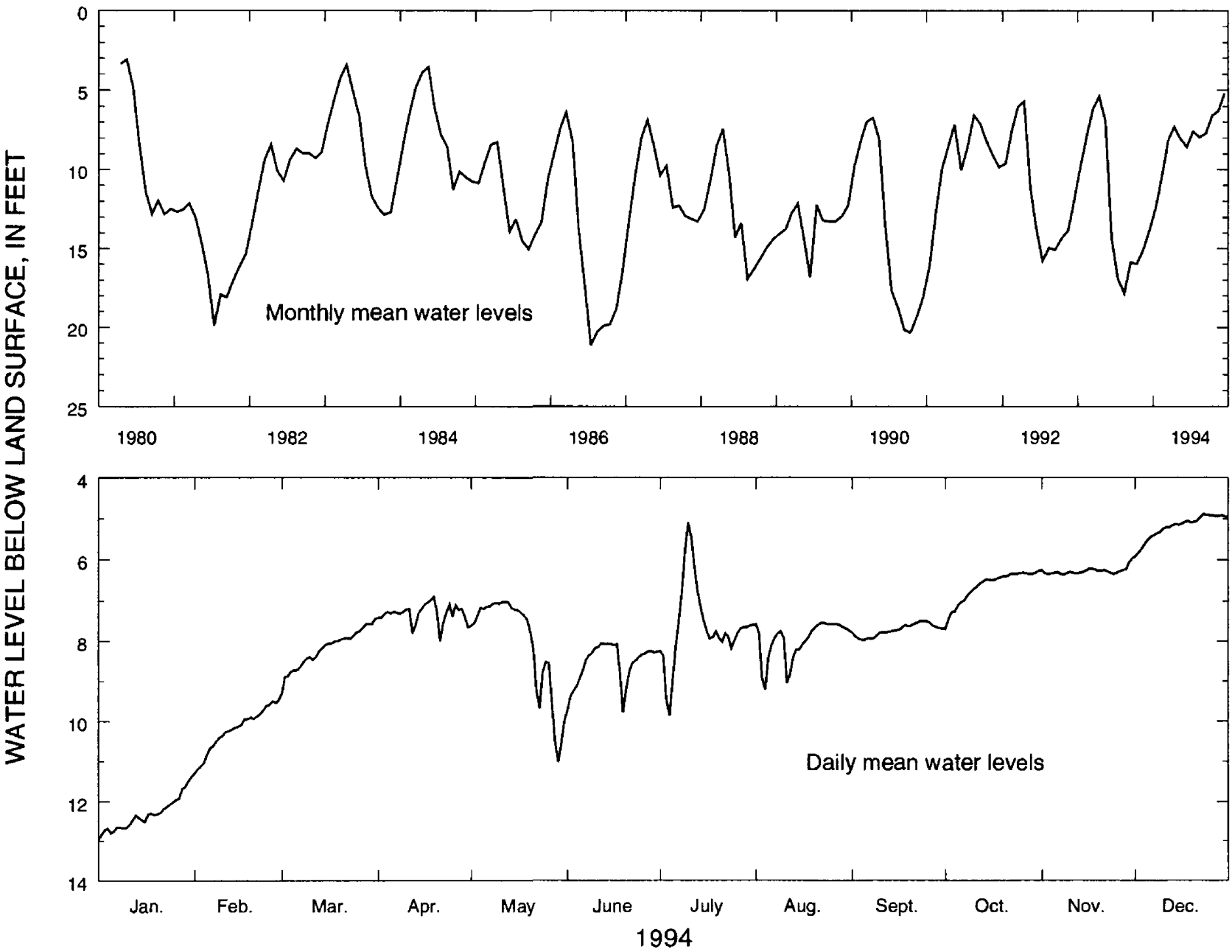


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	81.62	79.09	76.24	75.13	75.11	77.44	73.14	71.83	71.29	70.69	70.32	69.61
MEAN	82.03	80.47	77.35	75.55	75.87	78.21	74.55	72.39	71.46	71.01	71.07	69.95
LOW	82.93	82.12	78.82	76.22	77.81	78.73	77.37	73.14	71.68	71.39	71.44	70.34

SUMMARY FOR 1994 HIGH 69.61 (Dec. 12, 1994) MEAN 75.05 LOW 82.93 (Jan. 1, 1994)

Figure 69.—Water level in observation well 13L011, Dougherty County.

314330084005401 Local number, 13M005.
LOCATION.—Lat 31°43′30″, long 84°00′54″, Hydrologic Unit 03130006.
SITE NAME.—U.S. Geological Survey, test well DP-7.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 345 ft, cased to 330 ft, screen to 345 ft.
DATUM.—Altitude of land-surface datum is 230 ft.
REMARKS.—None.
PERIOD OF RECORD.—April 1980 to current year. Continuous record since April 1980.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 2.89 ft below land-surface datum, May 29, 1980; lowest, 23.37 ft below land-surface datum July 28, 1981.

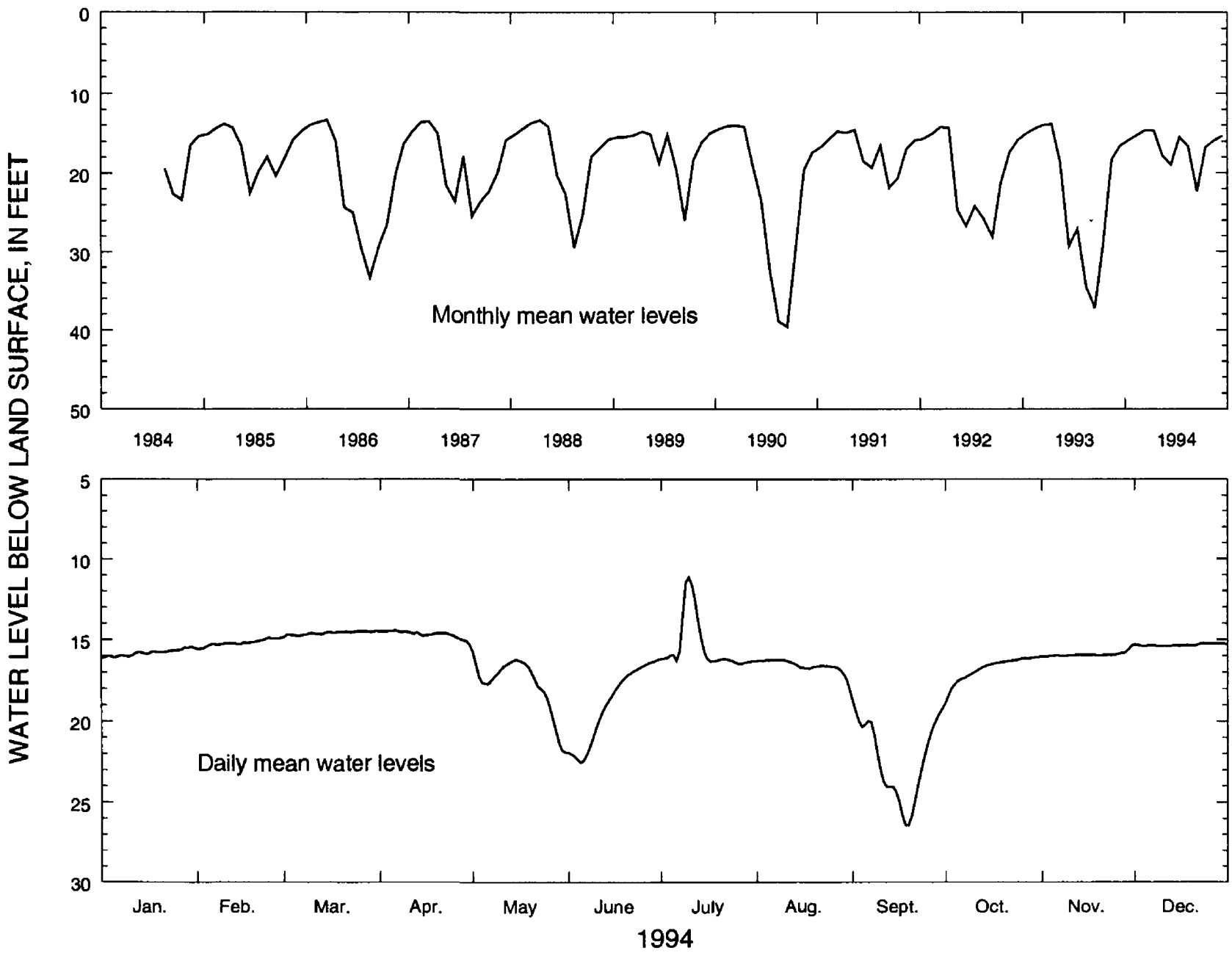


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	11.39	9.47	7.44	6.90	7.01	8.05	5.09	7.54	7.49	6.27	5.96	4.89
MEAN	12.33	10.21	8.19	7.31	8.04	8.56	7.61	7.97	7.72	6.64	6.27	5.19
LOW	12.96	11.30	9.28	8.00	11.02	9.78	9.85	9.22	7.97	7.69	6.36	5.91

SUMMARY FOR 1994 HIGH 4.89 (Dec. 23, 1994) MEAN 7.99 LOW 12.96 (Jan. 1, 1994)

Figure 70.—Water level in observation well 13M005, Worth County.

315731083542302 Local number, 14P015.
LOCATION.—Lat 31°57′31″, long 83°54′23″, Hydrologic Unit 03130006.
SITE NAME.—Georgia Geologic Survey, Veterans Memorial State Park, test well 2.
INSTRUMENTATION.—Digital recorder.
AQUIFER.— Claiborne.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 340 ft, cased to 240 ft, screen to 340 ft.
DATUM.—Altitude of land-surface datum is 252 ft.
REMARKS.—None.
PERIOD OF RECORD.—August 1984 to current year. Continuous record since August 1984.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 11.13 ft below land-surface datum, July 10, 1994; lowest, 42.09 ft below land-surface datum, September 2, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	15.46	14.90	14.48	14.45	15.78	16.24	11.13	16.25	18.72	16.07	15.39	15.24
MEAN	15.83	15.21	14.62	14.68	17.78	18.93	15.44	16.61	22.31	16.79	15.94	15.34
LOW	16.17	15.59	14.85	15.34	21.91	22.55	16.50	18.03	26.41	18.85	16.06	15.42

SUMMARY FOR 1994 HIGH 11.13 (July 10, 1994) MEAN 16.62 LOW 26.41 (Sept. 18, 1994)

Figure 71.—Water level in observation well 14P015, Crisp County.

Clayton Aquifer

The water level in the Clayton aquifer was monitored in 12 wells in 1994 and data from seven of these wells (fig. 72) are summarized in figures 73-79. Water levels in wells tapping the aquifer are affected by seasonal variations in local and regional pumping (Hicks and others, 1981).

Annual mean water levels in the seven wells monitored for this report (figs. 73-79) ranged from 1.6 ft lower to 18.3 ft higher in 1994 than in 1993. The water level in 14P014 increased rapidly in early July, coinciding with rainfall and flooding associated with Tropical Storm Alberto (Hicks, 1995). A record-low daily mean water level was recorded in well 11K005 (fig. 78) that was 0.3 ft lower than the previous record low.

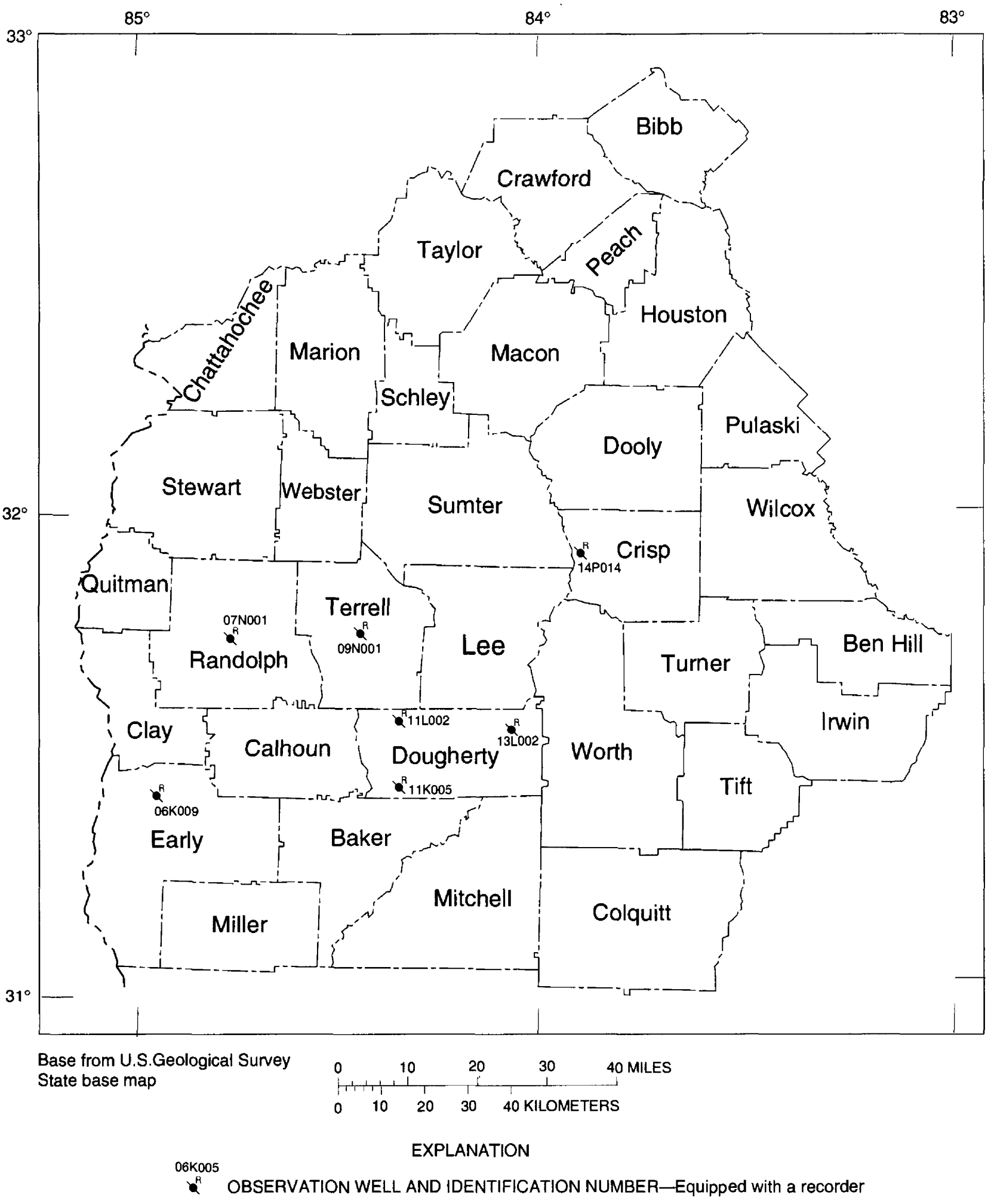
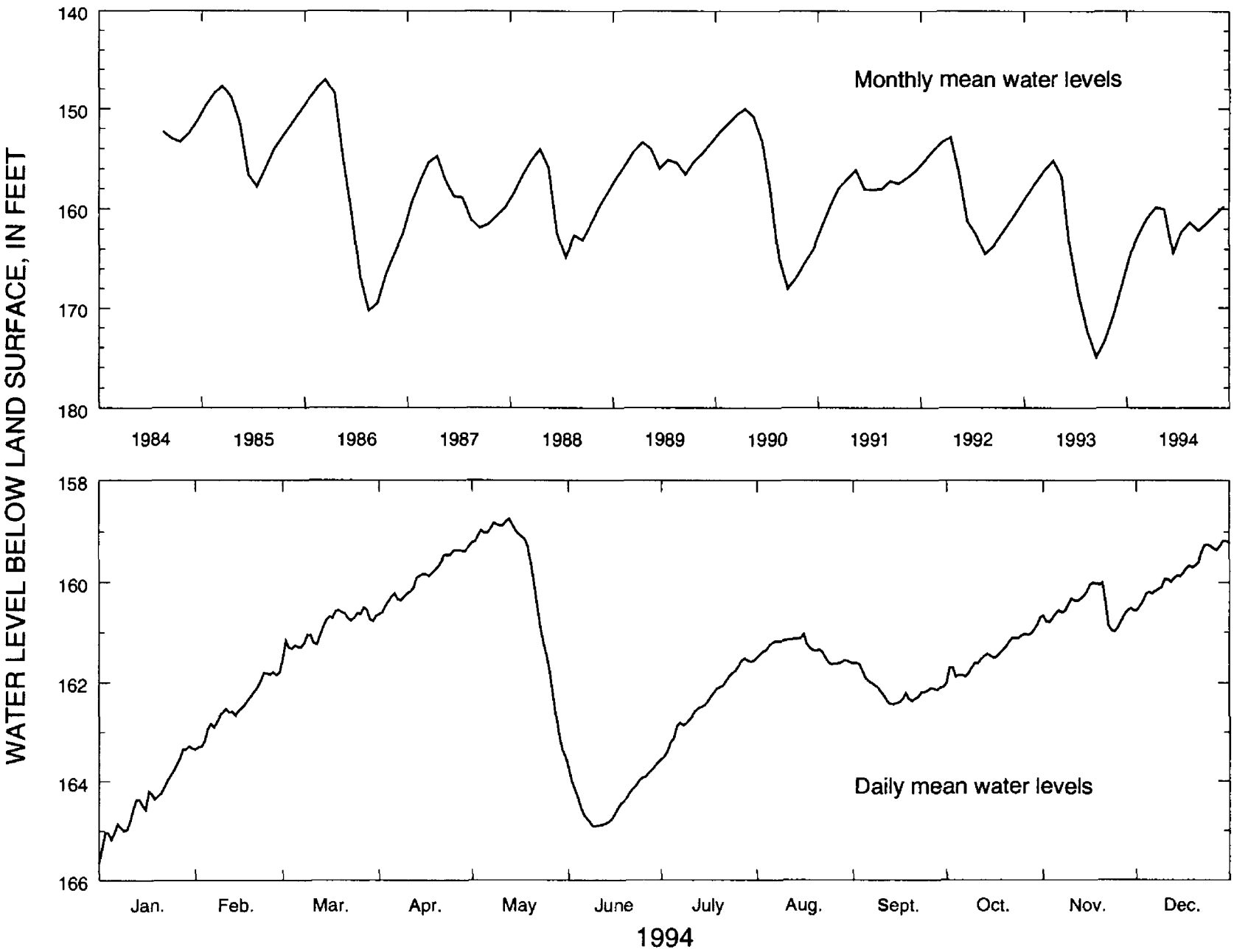


Figure 72.—Locations of observation wells completed in the Clayton aquifer.

312827084551501 Local number, 06K009.
LOCATION.—Lat 31°28′24″, long 84°55′12″, Hydrologic Unit 03130004.
SITE NAME.—Georgia Geologic Survey, Kolomoki Mounds State Park, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Clayton.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 612 ft, cased to 491 ft, open hole.
DATUM.—Altitude of land-surface datum is 310 ft.
REMARK.—None.
PERIOD OF RECORD.—August 1984 to current year. Continuous record since August 1984.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 146.62 ft below land-surface datum, April 3, 1986; lowest,174.69 ft below land-surface datum, September 30, 1993.

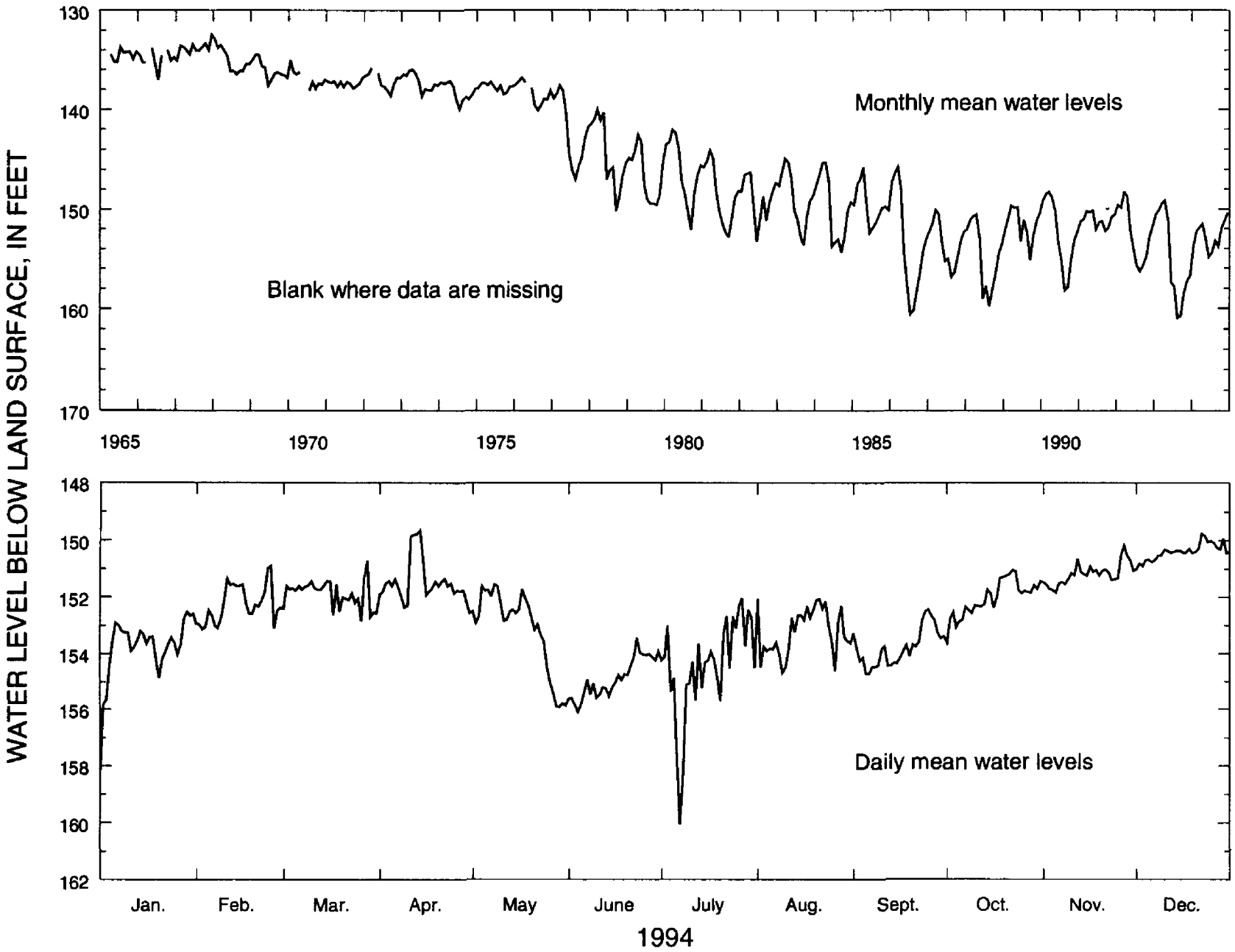


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	163.29	161.80	160.51	159.30	158.75	163.62	161.52	161.04	161.61	160.70	160.00	159.18
MEAN	164.39	162.49	160.91	159.89	160.04	164.35	162.38	161.35	162.14	161.41	160.50	159.77
LOW	165.65	163.36	161.54	160.64	163.50	164.91	163.56	161.64	162.44	162.01	160.99	160.56

SUMMARY FOR 1994 HIGH 158.75 (May 13, 1994) MEAN 161.62 LOW 165.65 (Jan. 1, 1994)

Figure 73.—Water level in observation well 06K009, Early County.

314602084473701 Local number, 07N001.
LOCATION.—Lat 31°46′09″, long 84°47′43″, Hydrologic Unit 03110204.
SITE NAME.—City of Cuthbert.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Clayton.
WELL CHARACTERISTICS.—Drilled unused municipal well, diameter 8 in., depth 372 ft, casing depth unknown.
DATUM.—Altitude of land-surface datum is 460 ft.
REMARKS.—Well near city wells.
PERIOD OF RECORD.—January 1965 to current year. Continuous record since January 1965.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 132.0 ft below land-surface datum, December 10, 1967; lowest, 163.00 ft below land-surface datum, August 23, 1993.

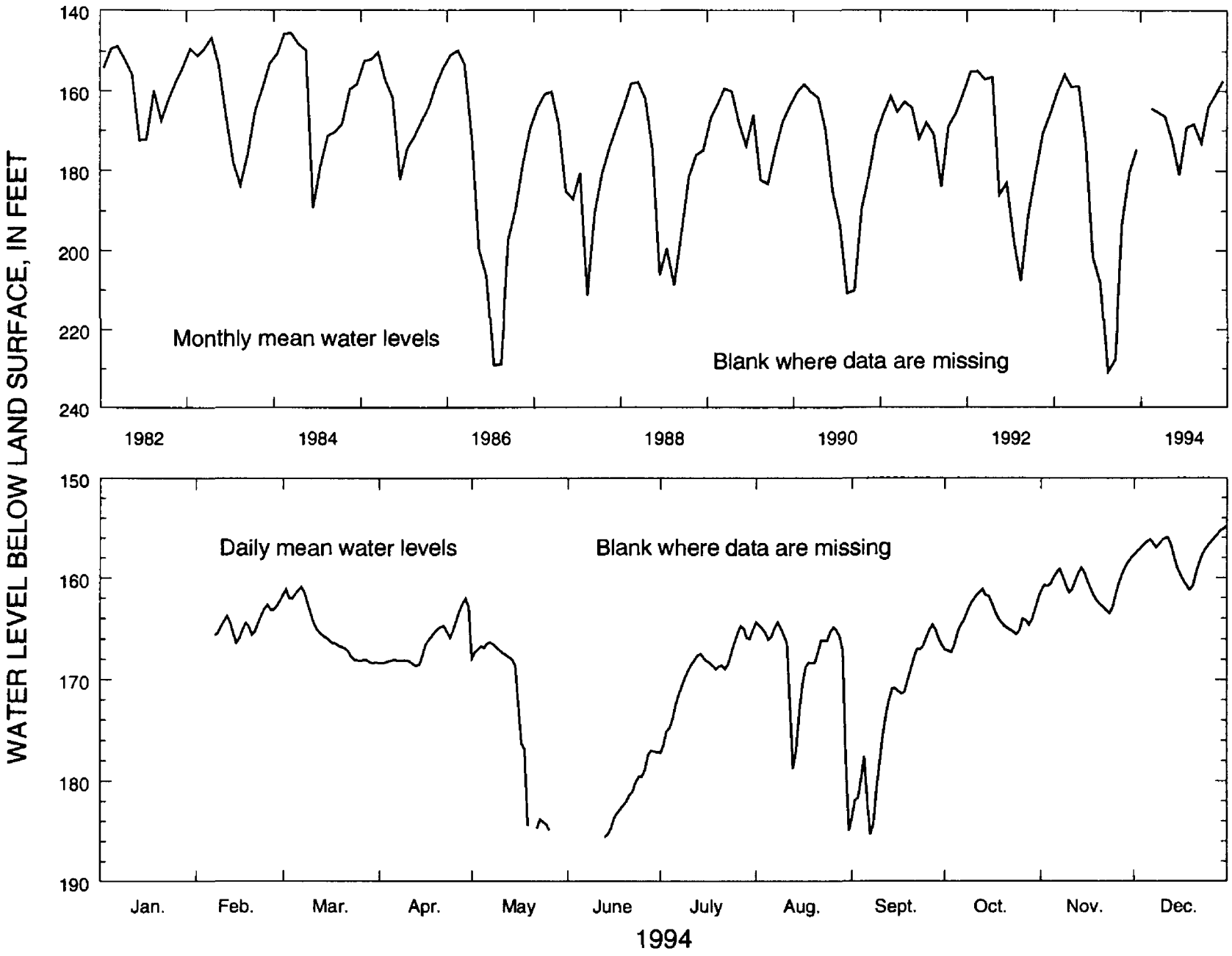


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	152.51	150.90	150.70	149.65	151.55	153.43	152.03	152.06	152.43	151.03	150.17	149.75
MEAN	153.79	152.25	151.89	151.47	153.10	154.89	154.45	153.22	153.79	152.03	151.17	150.38
LOW	158.17	153.13	152.83	152.55	155.91	156.09	160.05	154.70	154.73	153.61	151.85	151.00

SUMMARY FOR 1994 HIGH 149.65 (Apr. 14, 1994) MEAN 152.70 LOW 160.05 (July 7, 1994)

Figure 74.—Water level in observation well 07N001, Randolph County.

314611084310301 Local number, 09N001.
LOCATION.—Lat 31°46′09″, long 84°31′07″, Hydrologic Unit 03130009.
SITE NAME.—Bill Newman.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Clayton.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 6 in., depth 433 ft, cased to 333 ft, open hole.
DATUM.—Altitude of land-surface datum is 348 ft.
REMARKS.—Water levels for periods, January 1 to February 6, May 20-21, and May 27 to June 12, are missing.
PERIOD OF RECORD.—January 1982 to current year. Continuous record since Januray 1982.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 142.54 ft below land-surface datum, February 10, 1992; lowest, 248.83 ft below land-surface datum, August 31, 1993.

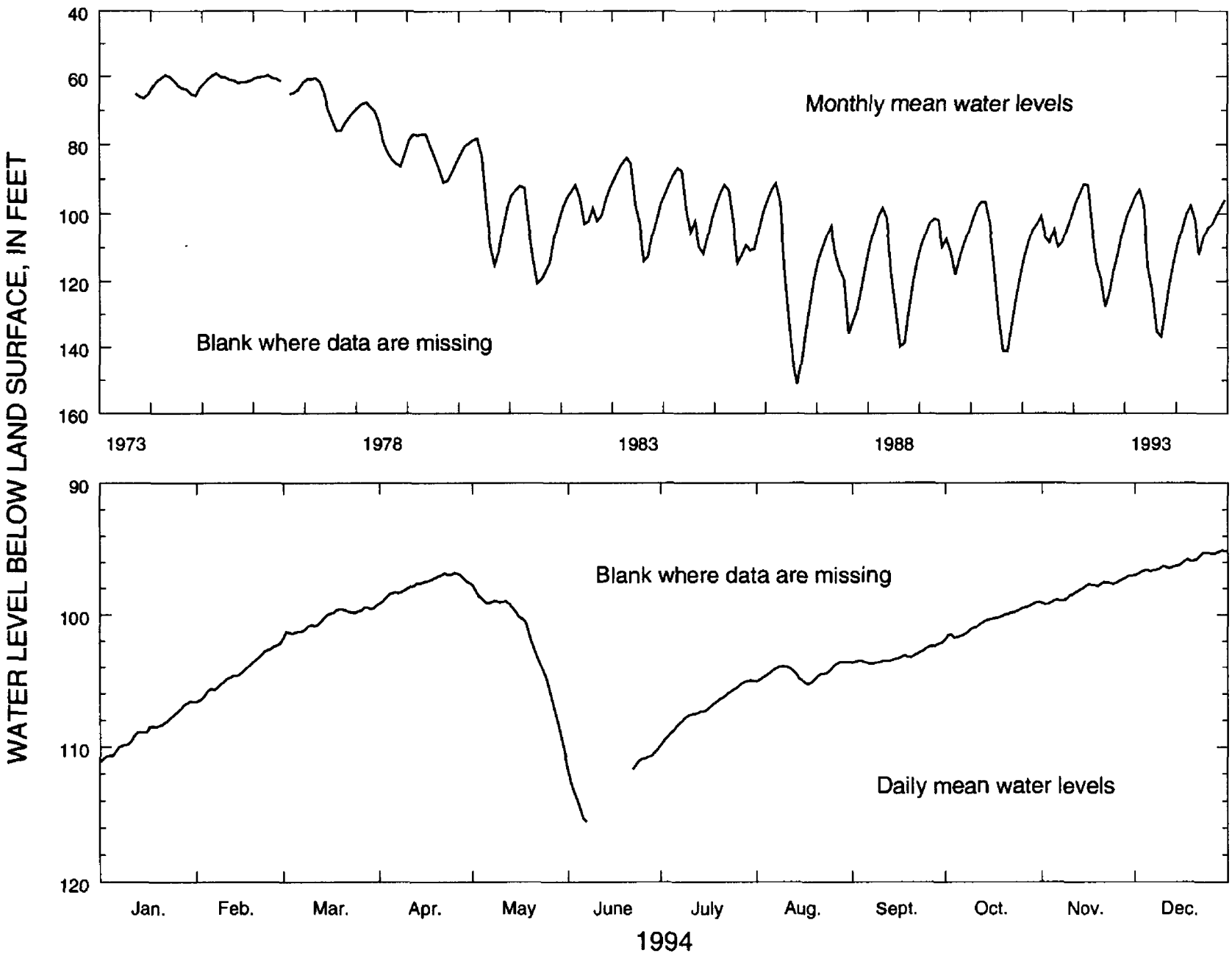


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	------	------	160.90	162.05	------	------	164.73	164.37	164.61	161.14	158.04	154.86
MEAN	------	------	165.30	166.43	------	------	169.18	168.38	173.10	164.06	160.73	157.39
LOW	------	------	168.37	168.64	------	------	177.20	184.93	185.29	167.32	163.49	161.24

SUMMARY FOR 1994 HIGH 154.86 (Dec. 31, 1994) MEAN 166.91 LOW 185.53 (June 13, 1994)

Figure 75.—Water level in observation well 09N001, Terrell County.

313532084203501 Local number, 11L002.
LOCATION.—Lat 31°35′32″, long 84°20′35″, Hydrologic Unit 03130008.
SITE NAME.—Georgia Geologic Survey, Albany Nursery.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Clayton.
WELL CHARACTERISTICS.—Drilled observation well, diameter 3 in., depth 656 ft, cased to 542 ft, open hole.
DATUM.—Altitude of land-surface datum is 222 ft.
REMARKS.—Water levels for period, June 8-21, are missing.
PERIOD OF RECORD.—September 1973 to current year. Continuous record since September 1973.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 58.90 ft below land-surface datum, April 29, 1975; lowest,152.61 ft below land-surface datum, August 23, 1986.

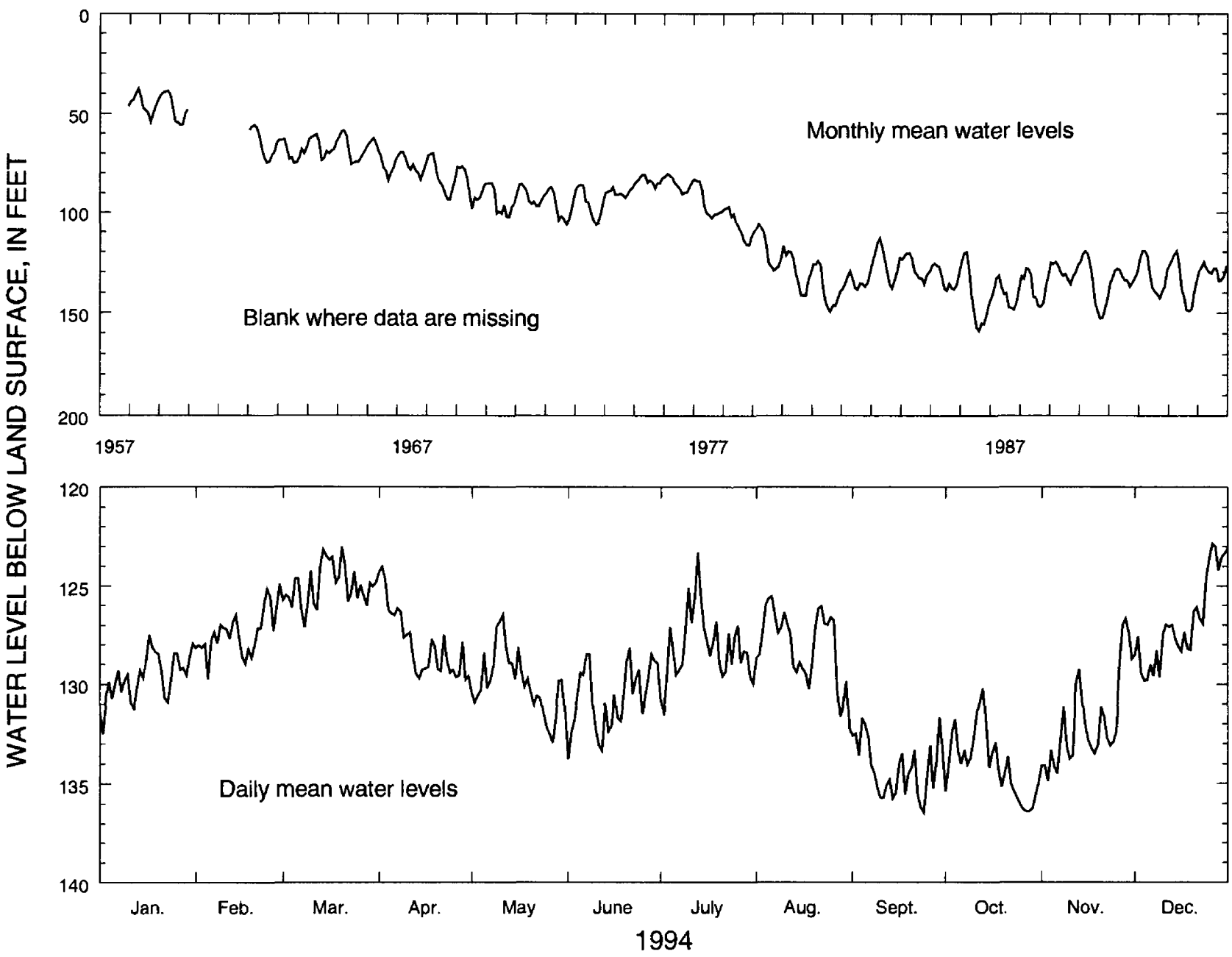


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	106.56	102.15	99.29	96.82	97.73	------	105.01	103.59	102.12	99.04	97.05	95.08
MEAN	108.81	104.39	100.28	97.66	101.74	------	107.06	104.39	103.17	100.43	98.10	96.00
LOW	111.10	106.62	101.77	99.14	110.54	------	109.86	105.24	103.72	101.91	99.19	97.02

SUMMARY FOR 1994 HIGH 95.08 (Dec. 29, 1994) MEAN 102.47 LOW 115.53 (June 7, 1994)

Figure 76.—Water level in observation well 11L002, Dougherty County.

313554084062501 Local number, 13L002.
LOCATION.—Lat 31°35′51″, long 84°06′24″, Hydrologic Unit 03130008.
SITE NAME.—Albany Water, Gas, and Light Commission, Turner City 2.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Clayton.
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 12 in., depth 760 ft, cased to 713 ft, open hole.
DATUM.—Altitude of land-surface datum is 212.84 ft.
REMARKS.—None.
PERIOD OF RECORD.—December 1957 to current year. Continuous record December 1957 to December 1959, and since January 1962.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 38.19 ft below land-surface datum, April 1, 1959; lowest, 160.88 ft below land-surface datum, July 26, 1986.

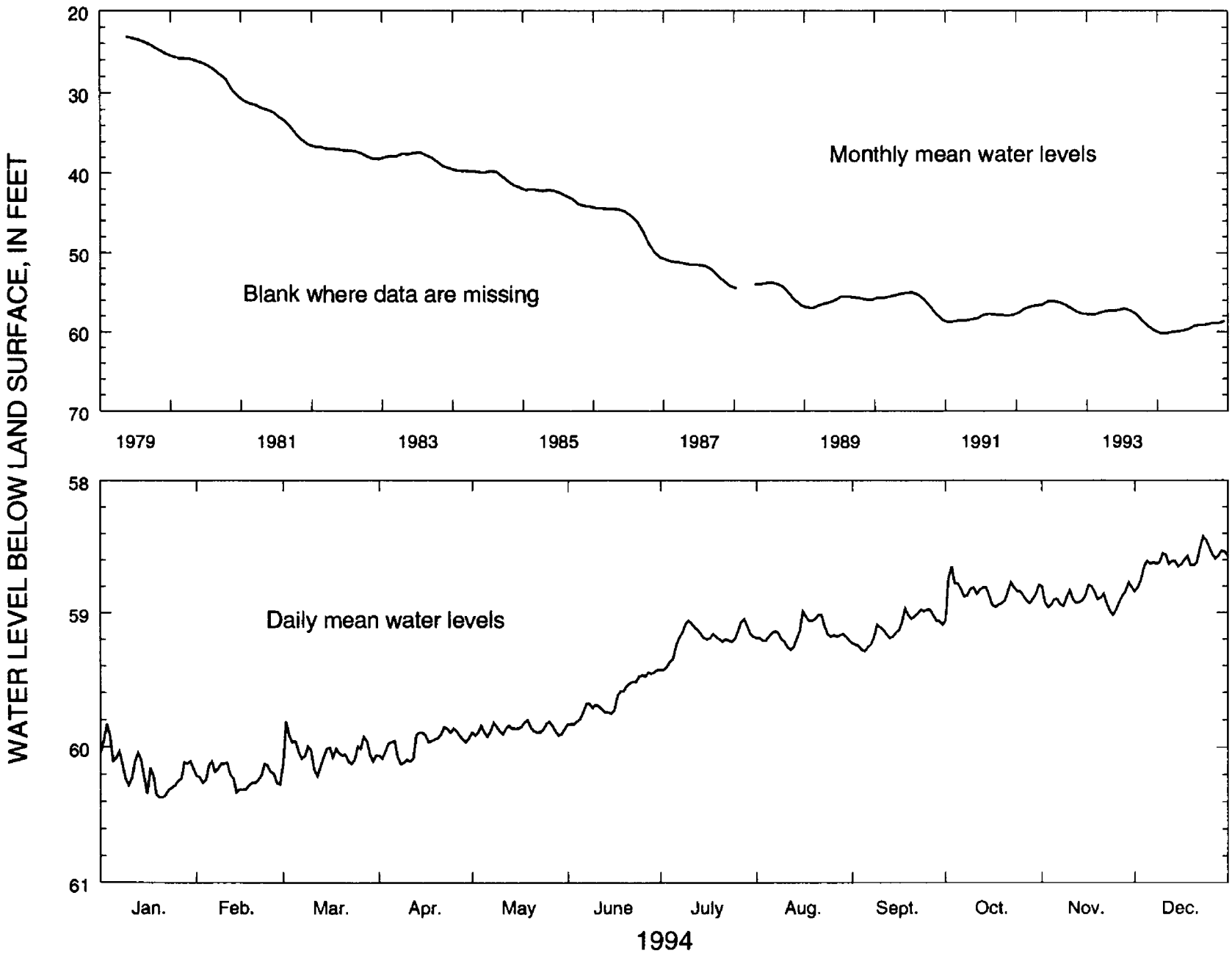


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	127.48	124.93	123.02	124.04	126.48	128.16	123.31	125.54	131.69	130.23	126.66	122.85
MEAN	129.64	127.39	125.00	127.96	129.93	130.64	128.11	128.08	134.22	134.06	131.90	126.86
LOW	132.51	129.72	127.14	129.79	132.95	133.77	131.54	132.27	136.43	136.41	134.91	129.82

SUMMARY FOR 1994 HIGH 122.85 (Dec. 26, 1994) MEAN 129.48 LOW 136.43 (Sept. 24, 1994)

Figure 77.—Water level in observation well 13L002, Dougherty County.

312654084210103 Local number, 11K005.
LOCATION.—Lat 31°26′54″, long 84°21′01″, Hydrologic Unit 03130008.
SITE NAME.—U.S. Geological Survey, test well 12.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Clayton.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 690 ft, cased to 630 ft, open hole.
DATUM.—Altitude of land-surface datum is 183 ft.
REMARKS.—None.
PERIOD OF RECORD.—May 1979 to current year. Continuous record since May 1979.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 23.03 ft below land-surface datum, May 24, 1979; lowest, 60.37 ft below land-surface datum, January 20-21,1994.

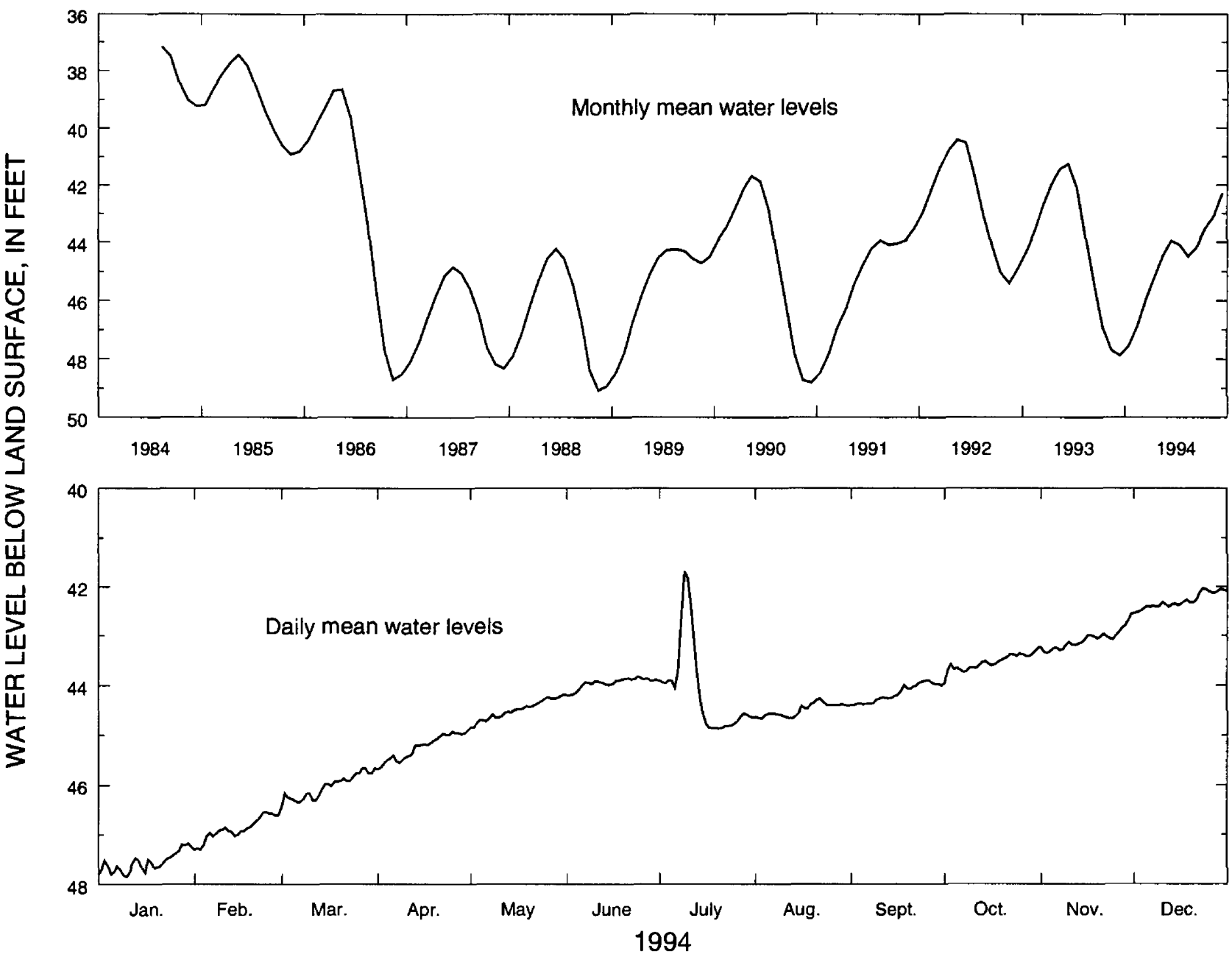


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	59.83	60.10	59.81	59.85	59.80	59.43	59.05	58.99	58.97	58.65	58.77	58.42
MEAN	60.17	60.21	60.04	59.97	59.87	59.64	59.20	59.15	59.11	58.85	58.89	58.60
LOW	60.37	60.33	60.21	60.12	59.92	59.83	59.43	59.28	59.29	59.06	59.02	58.84

SUMMARY FOR 1994 HIGH 58.42 (Dec. 23, 1994) MEAN 59.47 LOW 60.37 (Jan. 20-21, 1994)

Figure 78.—Water level in observation well 11K005, Dougherty County.

315731083542301 Local number, 14P014.
LOCATION.—Lat 31°57′31″, long 83°54′23″, Hydrologic Unit 03130006.
SITE NAME.—Georgia Geologic Survey, Veterans Memorial State Park, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Clayton.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 550 ft, cased to 500 ft, open hole.
DATUM.—Altitude of land-surface datum is 252 ft.
REMARKS.—None.
PERIOD OF RECORD.—August 1984 to current year. Continuous record since August 1984.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 37.16 ft below land-surface datum, September 2, 1984; lowest, 49.26 ft below land-surface datum, November 29, 1988.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	47.17	46.54	45.65	44.90	44.18	43.83	41.68	44.27	43.90	43.25	42.56	42.04
MEAN	47.56	46.88	46.03	45.23	44.49	43.95	44.10	44.49	44.16	43.54	43.09	42.29
LOW	47.85	47.30	46.42	45.67	44.83	44.19	44.86	44.66	44.40	43.96	43.36	42.54

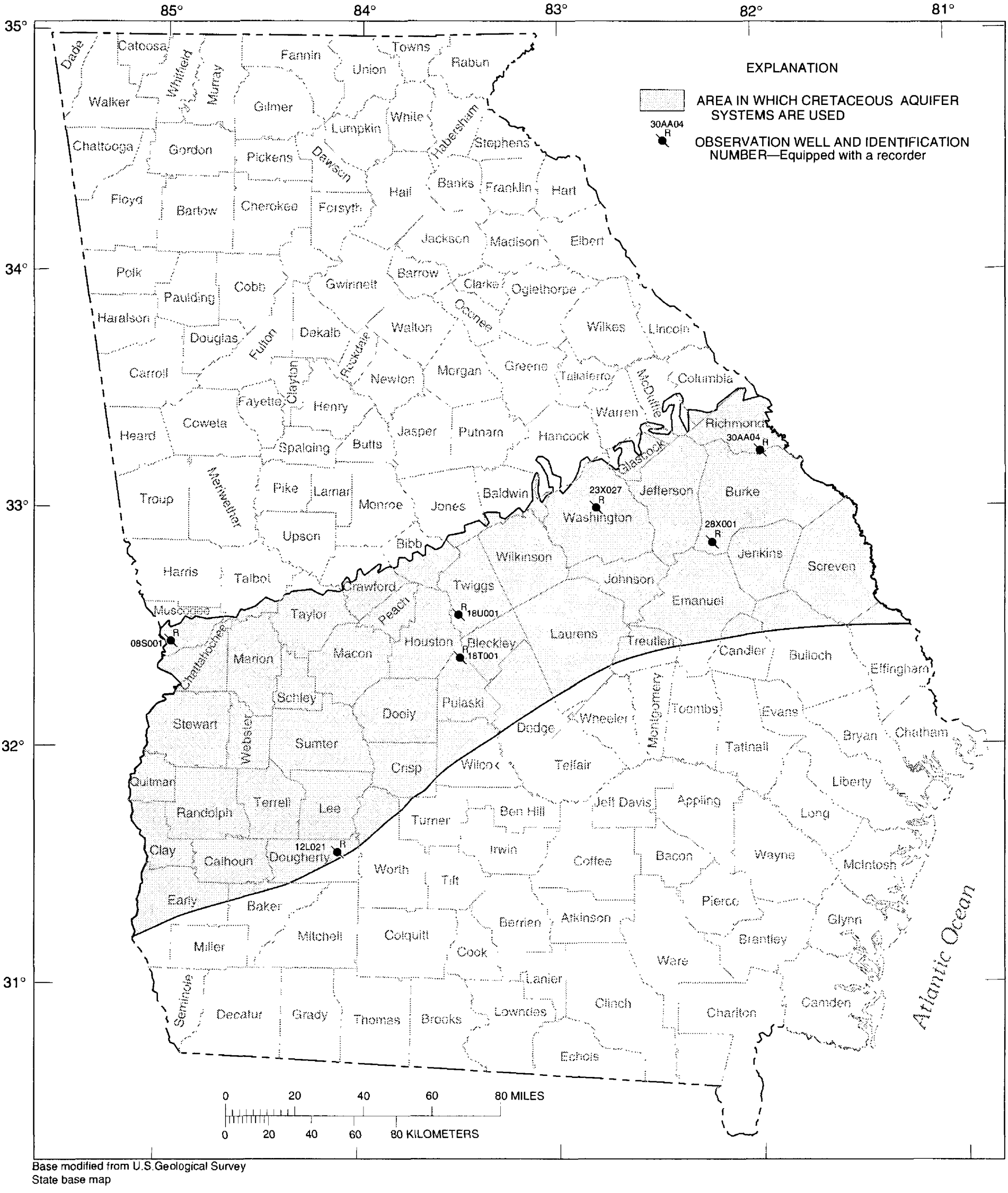
SUMMARY FOR 1994 HIGH 41.68 (July 9, 1994) MEAN 44.64 LOW 47.85 (Jan. 10, 1994)

Figure 79.—Water level in observation well 14P014, Crisp County.

Cretaceous Aquifers and Aquifer Systems

Water levels in Cretaceous aquifers and aquifer systems were monitored in 15 wells in 1994 and data from seven of these wells (fig. 80) are summarized in figures 81-87. The Cretaceous aquifers and aquifer systems include the Providence aquifer in southwestern Georgia and the Dublin, the Midville, and the Dublin-Midville aquifer systems in the northeastern part of the Coastal Plain. Water levels in these aquifers and aquifer systems are influenced by variations in precipitation and pumping.

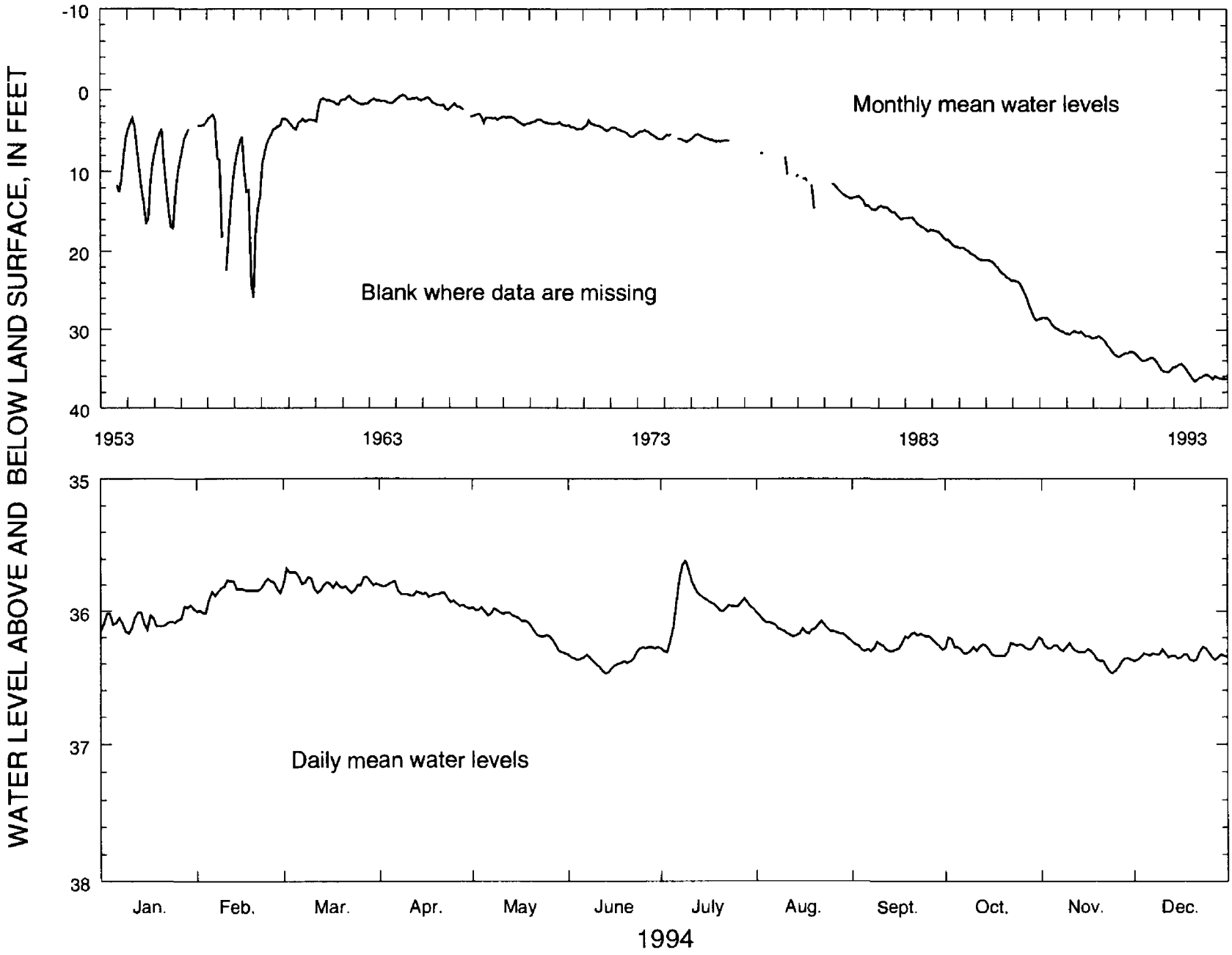
In Chattahoochee County near Columbus, the annual mean water level in well 06S001 (fig. 81) was 0.7 ft lower in 1994 than in 1993. The water level in well 06S001 increased rapidly in early July, coinciding with rainfall and flooding associated with Tropical Storm Alberto (Hicks, 1995).



Base modified from U.S.Geological Survey
State base map

Figure 80.—Locations of observation wells completed in Cretaceous aquifers and aquifer systems.

322036084590301 Local number, 06S001.
LOCATION.—Lat 32°20′31″, long 84°59′10″, Hydrologic Unit 03130003.
SITE NAME.—U.S. Army, Fort Benning.
INSTRUMENTATION.—Digital recorder.
AQUIFER.— Cretaceous age formations (Blufftown, Eutaw, and Tuscaloosa Formations).
WELL CHARACTERISTICS.—Drilled unused supply well, diameter 12 in., depth 568 ft, screened intervals 215-220 ft, 230-235 ft, 280-290 ft, and 540-550 ft.
DATUM.—Altitude of land-surface datum is 255 ft.
REMARKS.—None.
PERIOD OF RECORD.—August 1953 to current year. Continuous record since August 1953.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 0.37 ft below land-surface datum, April 10, 1964; lowest, 36.70 ft below land-surface datum, October 23-24, 1993.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	35.95	35.75	35.67	35.77	35.97	36.27	35.61	36.01	36.16	36.20	36.21	36.27
MEAN	36.07	35.85	35.78	35.87	36.09	36.36	35.95	36.13	36.24	36.28	36.33	36.34
LOW	36.17	36.01	35.86	35.98	36.32	36.47	36.31	36.21	36.30	36.34	36.47	36.38

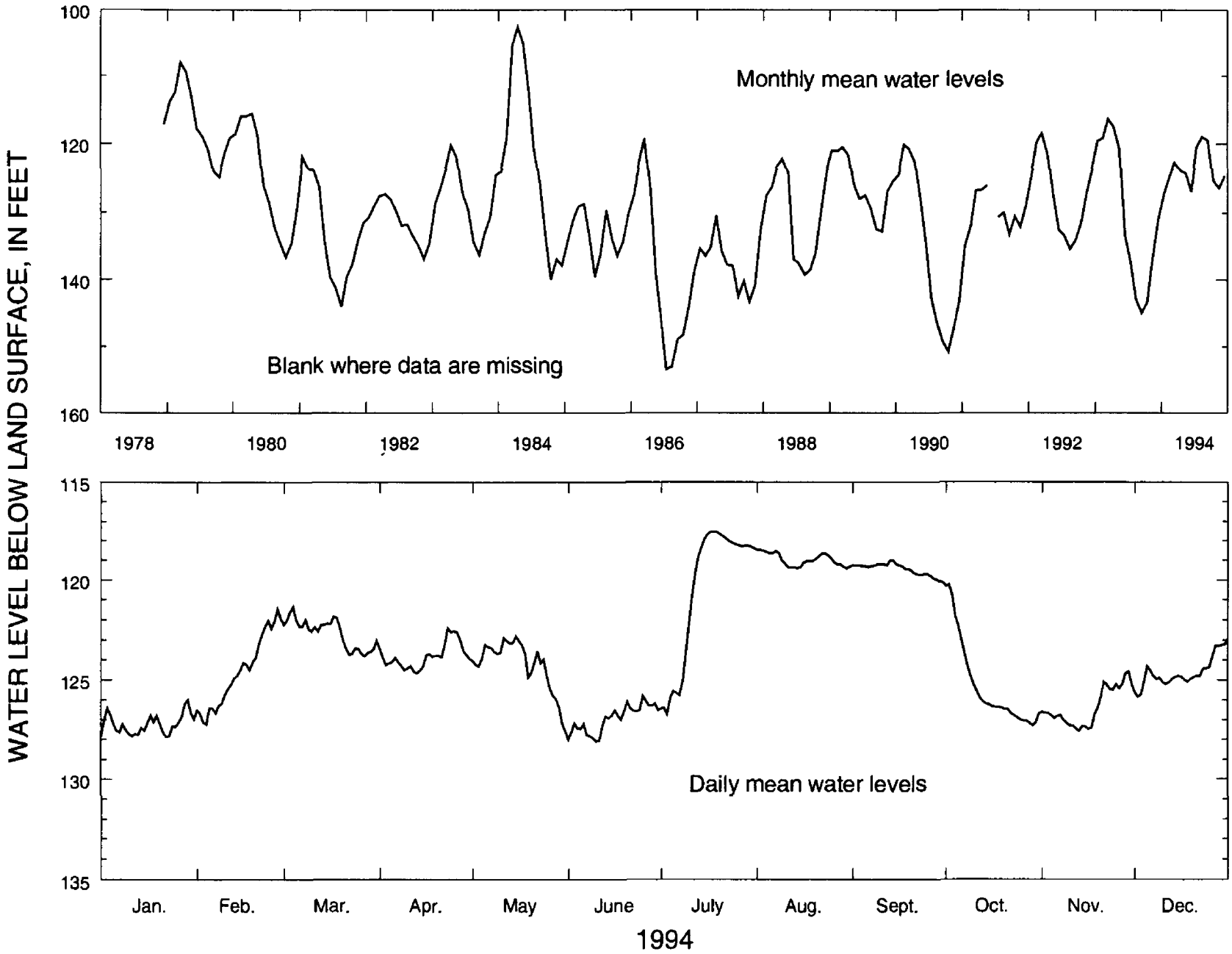
SUMMARY FOR 1994 HIGH 35.61 (July 9, 1994) MEAN 36.11 LOW 36.47 (June 13, 1994)

Figure 81.—Water level in observation well 06S001, Chattahoochee County.

Providence Aquifer

The water level in the Providence aquifer in the Albany area (fig. 80) was monitored in one well in 1994, as shown in figure 82. Water levels in the aquifer are influenced by variations in precipitation and pumping (Clarke and others, 1983). In 1994, the annual mean water level in well 12L021 (fig. 82) was 6.5 ft higher than in 1993. The water level in well 12L021 increased rapidly in early July of 1994, coinciding with rainfall and flooding associated with Tropical Storm Alberto (Hicks,1995).

313534084103003 Local number, 12L021.
LOCATION.—Lat 31°35′37″, long 84°10′29″, Hydrologic Unit 03130008.
SITE NAME.—U.S. Geological Survey, test well 10.
INSTRUMENTATION.—Electronic data recorder.
AQUIFER.—Providence.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 834 ft, cased to 810 ft, screen to 830 ft.
DATUM.—Altitude of land-surface datum is 198 ft.
REMARKS.—None.
PERIOD OF RECORD.—December 1978 to current year. Continuous record since December 1978.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 101.59 ft below land-surface datum, April 26, 1984; lowest, 156.36 ft below land-surface datum, July 26, 1986.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	125.99	121.45	121.34	122.39	122.80	125.79	117.55	118.46	119.01	120.22	124.58	122.96
MEAN	127.23	124.62	122.66	123.79	124.22	126.95	120.53	118.97	119.46	125.30	126.37	124.62
LOW	127.87	127.24	123.82	124.66	127.58	128.10	126.71	119.41	120.15	127.30	127.57	125.84

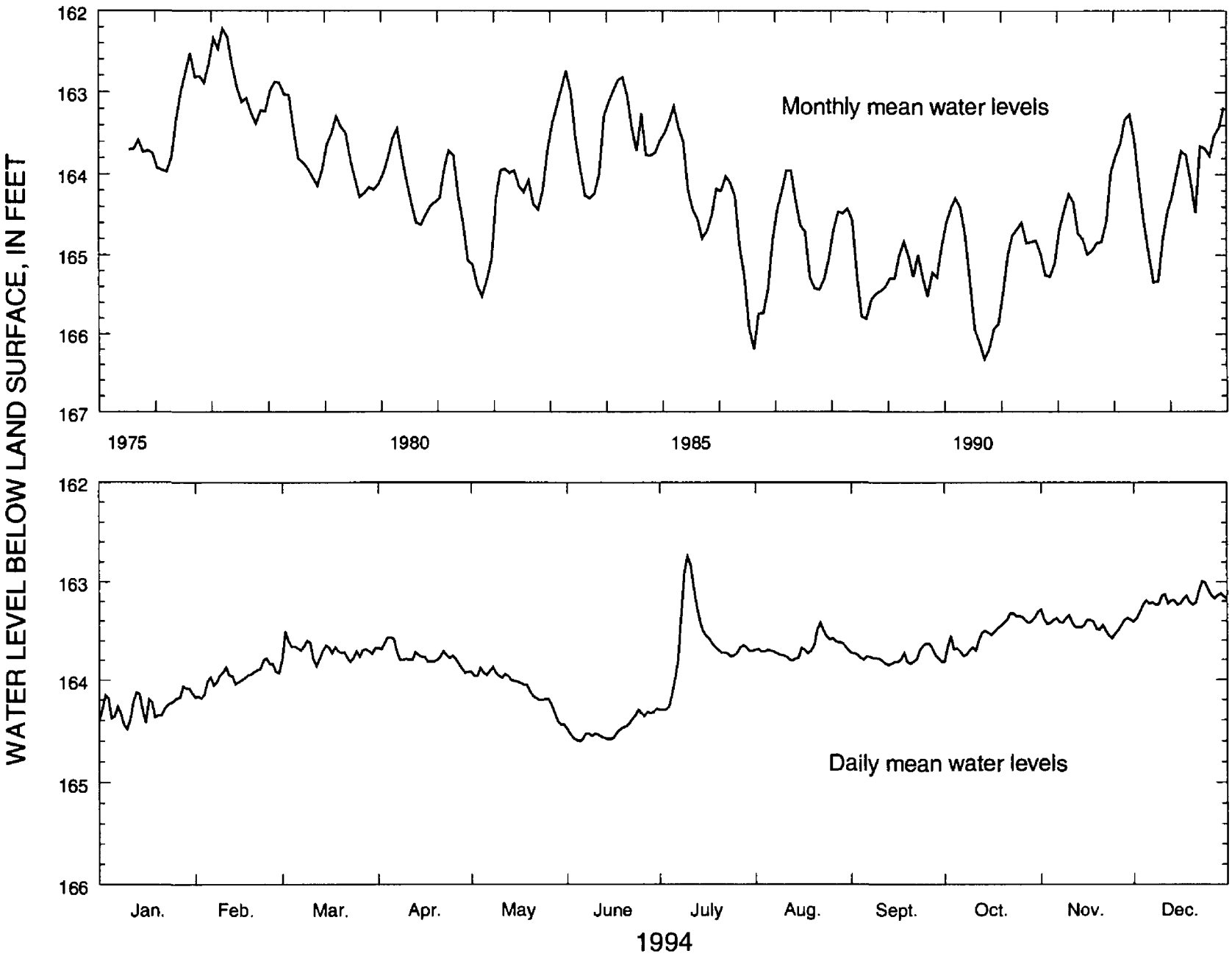
SUMMARY FOR 1994 HIGH 117.55 (July 18, 1994) MEAN 123.71 LOW 128.10 (June 10, 1994)

Figure 82.—Water level in observation well 12L021, Dougherty County.

Dublin aquifer system

The water level was monitored in four wells in the Dublin aquifer system in 1994 and data from one of these wells (fig. 80) are summarized in figure 83. In the eastern Houston County and western Twiggs County area, water levels in wells tapping the aquifer are affected by precipitation and pumping (Clarke and others, 1985). The annual mean water level in well 18U001 (fig. 83) was 0.5 ft higher in 1994 than in 1993. The water level in well 18U001 increased rapidly in early July, coinciding with rainfall and flooding associated with Tropical Storm Alberto (Hicks,1995).

323302083263401 Local number, 18U001.
LOCATION.—Lat 32°33′02″, long 83°26′34″, Hydrologic Unit 03070104.
SITE NAME.—Georgia Kraft, U.S. Geological Survey, test well 3.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Dublin aquifer system.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 616 ft, cased to 586 ft, screen to 616 ft.
DATUM.—Altitude of land-surface datum is 442 ft.
REMARKS.—None.
PERIOD OF RECORD.—July 1975 to current year. Continuous record since July 1975.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 162.0 ft below land-surface datum, April 4, 1977; lowest, 166.44 ft below land-surface datum, October 3, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	164.06	163.78	163.50	163.57	163.87	164.29	162.74	163.42	163.63	163.30	163.28	162.99
MEAN	164.26	163.97	163.71	163.76	164.08	164.47	163.65	163.68	163.77	163.52	163.43	163.18
LOW	164.48	164.18	163.86	163.93	164.44	164.60	164.30	163.81	163.85	163.82	163.58	163.41

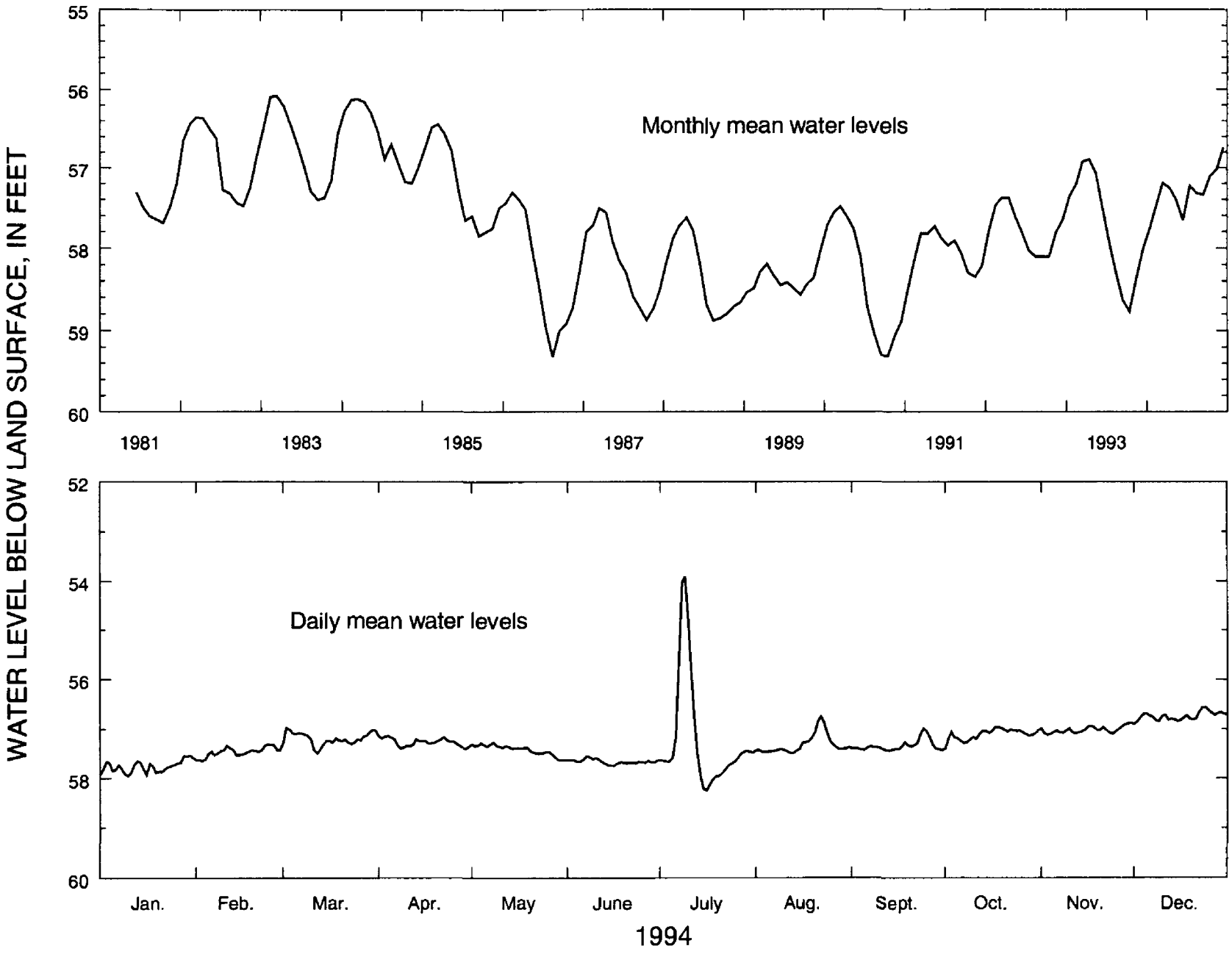
SUMMARY FOR 1994 HIGH 162.74 (July 10, 1994) MEAN 163.78 LOW 164.60 (June 5, 1994)

Figure 83.—Water level in observation well 18U001, Twiggs County.

Midville aquifer system

The water level was monitored in four wells in the Midville aquifer system in 1994 (fig. 80). Data from two of these wells, 18T001 and 28X001, are summarized in figures 84 and 85. The water level in the Midville aquifer system is affected mainly by regional pumping (Clarke and others, 1985). In 1994, the annual mean water level in these wells ranged from 0.9 ft lower to 0.5 ft higher than in 1993. The water level in well 18T001 increased rapidly in early July, coinciding with rainfall associated with Tropical Storm Alberto (Hicks,1995).

322245083290101 Local number, 18T001.
LOCATION.—Lat 32°22′45″, long 83°29′01″, Hydrologic Unit 03070104.
SITE NAME.—U.S. Geological Survey, Arrowhead, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Midville aquifer system.
WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 1,555 ft, cased to 970 ft, screened intervals, 970-980 ft, 1,110-1,130 ft, and 1,270-1,280 ft.
DATUM.—Altitude of land-surface datum is 334 ft.
REMARKS.—None.
PERIOD OF RECORD.— June 1981 to current year. Continuous record since June 1981.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 55.48 ft below land-surface datum, April 12, 1983; lowest, 59.52 ft below land-surface datum, October 7-8, 1990.

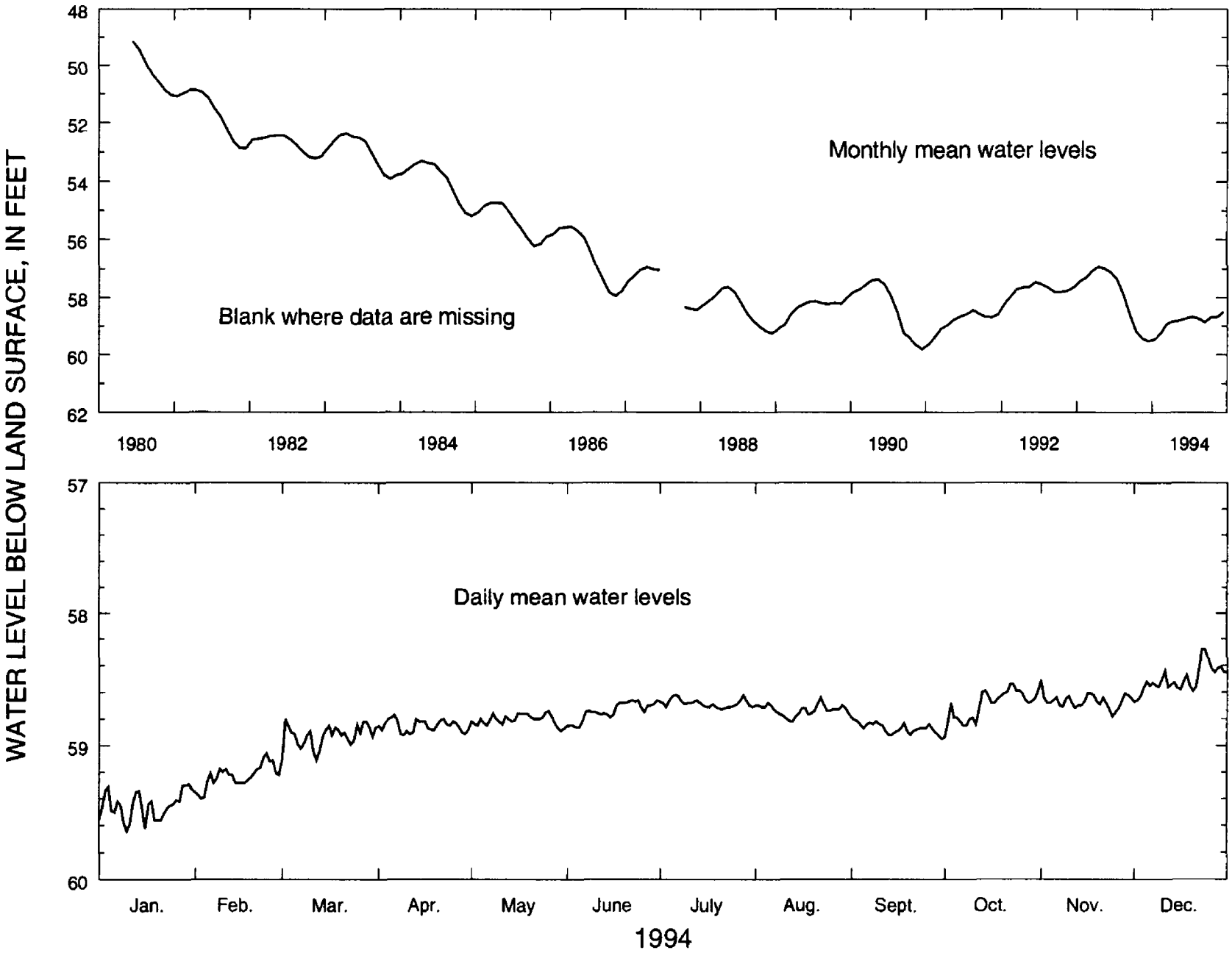


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	57.53	57.31	56.97	57.14	57.27	57.55	53.90	56.75	56.99	56.96	56.88	56.56
MEAN	57.76	57.46	57.19	57.26	57.41	57.66	57.23	57.32	57.34	57.11	57.02	56.74
LOW	57.95	57.64	57.49	57.39	57.63	57.74	58.24	57.48	57.44	57.40	57.12	56.90

SUMMARY FOR 1994 HIGH 53.90 (July 9, 1994) MEAN 57.29 LOW 58.24 (July 16, 1994)

Figure 84.—Water level in observation well 18T001, Pulaski County.

325232082131501 Local number, 28X001.
LOCATION.—Lat 32°52′32″, long 82°13′15″, Hydrologic Unit 03060201.
SITE NAME.—U.S. Geological Survey, Midville, test well 1.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Midville aquifer system.
WELL CHARACTERISTICS.—Drilled observation well, diameter 4 in., depth 1,045 ft, cased to 1,025 ft, screen to 1,045 ft.
DATUM.—Altitude of land-surface datum is 269 ft.
REMARKS.—None.
PERIOD OF RECORD.—June 1980 to current year. Continuous record since June 1980.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 49.07 ft below land-surface datum, June 4, 1980; lowest, 59.91 ft below land-surface datum, November 30, 1990.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	59.29	59.06	58.80	58.77	58.74	58.66	58.62	58.64	58.79	58.54	58.51	58.28
MEAN	59.45	59.23	58.92	58.85	58.81	58.74	58.68	58.74	58.87	58.69	58.67	58.50
LOW	59.64	59.40	59.11	58.92	58.89	58.86	58.73	58.82	58.95	58.94	58.78	58.67

SUMMARY FOR 1994 HIGH 58.28 (Dec. 23, 1994) MEAN 58.84 LOW 59.64 (Jan. 10, 1994)

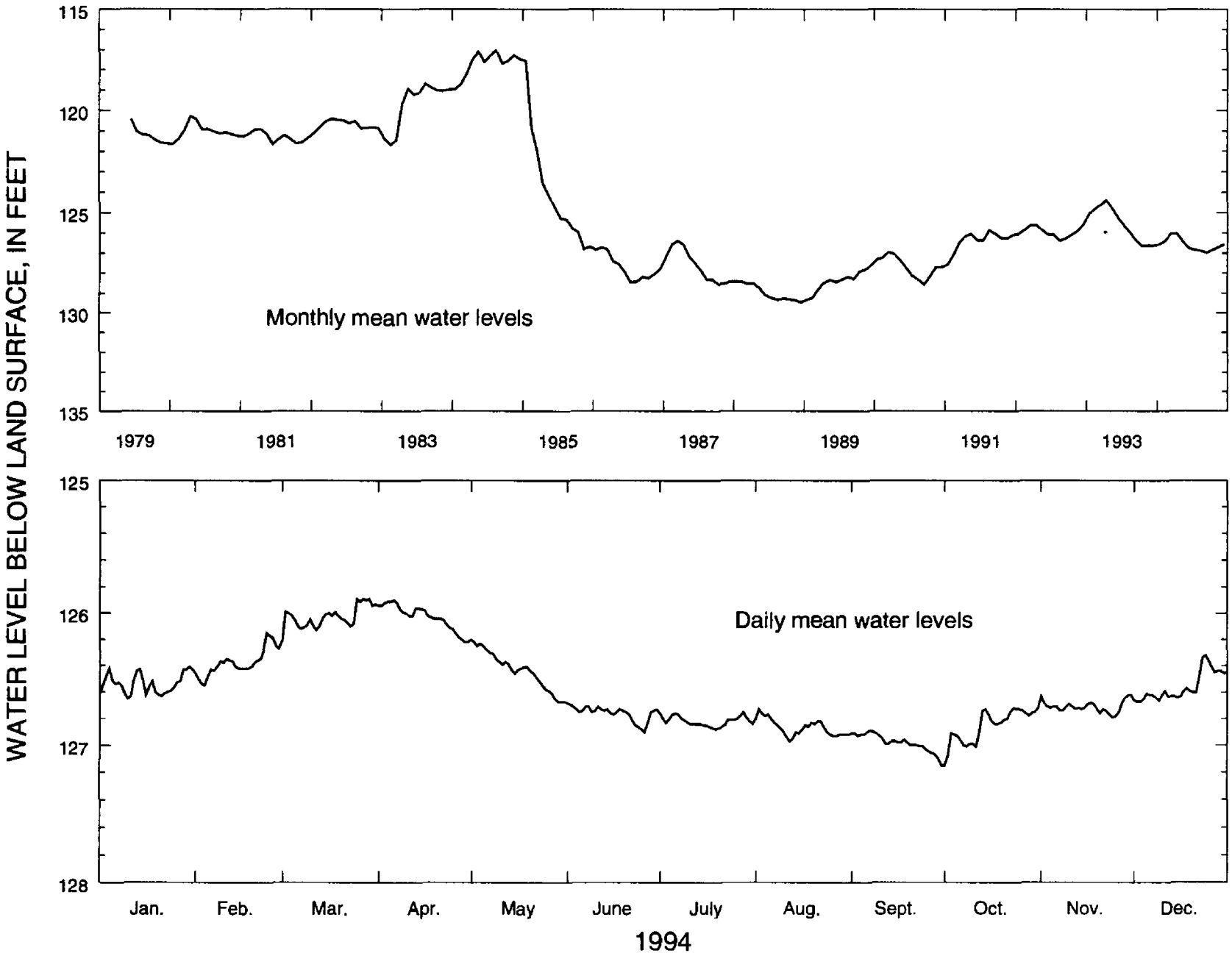
Figure 85.—Water level in observation well 28X001, Burke County.

Dublin-Midville aquifer system

The water level in the Dublin-Midville aquifer system (fig. 80) was monitored in two wells in 1994 and data from these wells are summarized in figures 86 and 87. Water levels in wells tapping the Dublin-Midville aquifer system in Richmond County are influenced mainly by precipitation and by local pumping (Gorday, 1985, p. 28). The annual mean water level in well 30AA04 (fig. 86) near McBean in southern Richmond County, was 1.0 ft lower in 1994 than in 1993.

At Sandersville, Washington County, the water level in the Dublin-Midville aquifer system is influenced primarily by local pumping. During 1994, the annual mean water level in well 23X027 (fig. 87) was 0.4 ft lower than in 1993. A record low daily mean water level was recorded in this well that was 1.3 ft lower than the previous record low.

331711081573701 Local number, 30AA04.
LOCATION.—Lat 33°15′25″, long 81°57′47″, Hydrologic Unit 03060106.
SITE NAME.—Richmond County water system, U.S. Geological Survey, McBean 2.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Dublin-Midville aquifer system.
WELL CHARACTERISTICS.—Drilled unused municipal well, diameter 6 in., depth 496 ft, cased to 174 ft, screened intervals, 174-192 ft, 299-319 ft, 341-372 ft, and 393-434 ft.
DATUM.—Altitude of land-surface datum is 293 ft.
REMARKS.—None.
PERIOD OF RECORD.—June 1979 to current year. Continuous record since June 1979.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 116.70 ft below land-surface datum, May 30, 1984; lowest, 129.61 ft below land-surface datum, August 28, 1988.

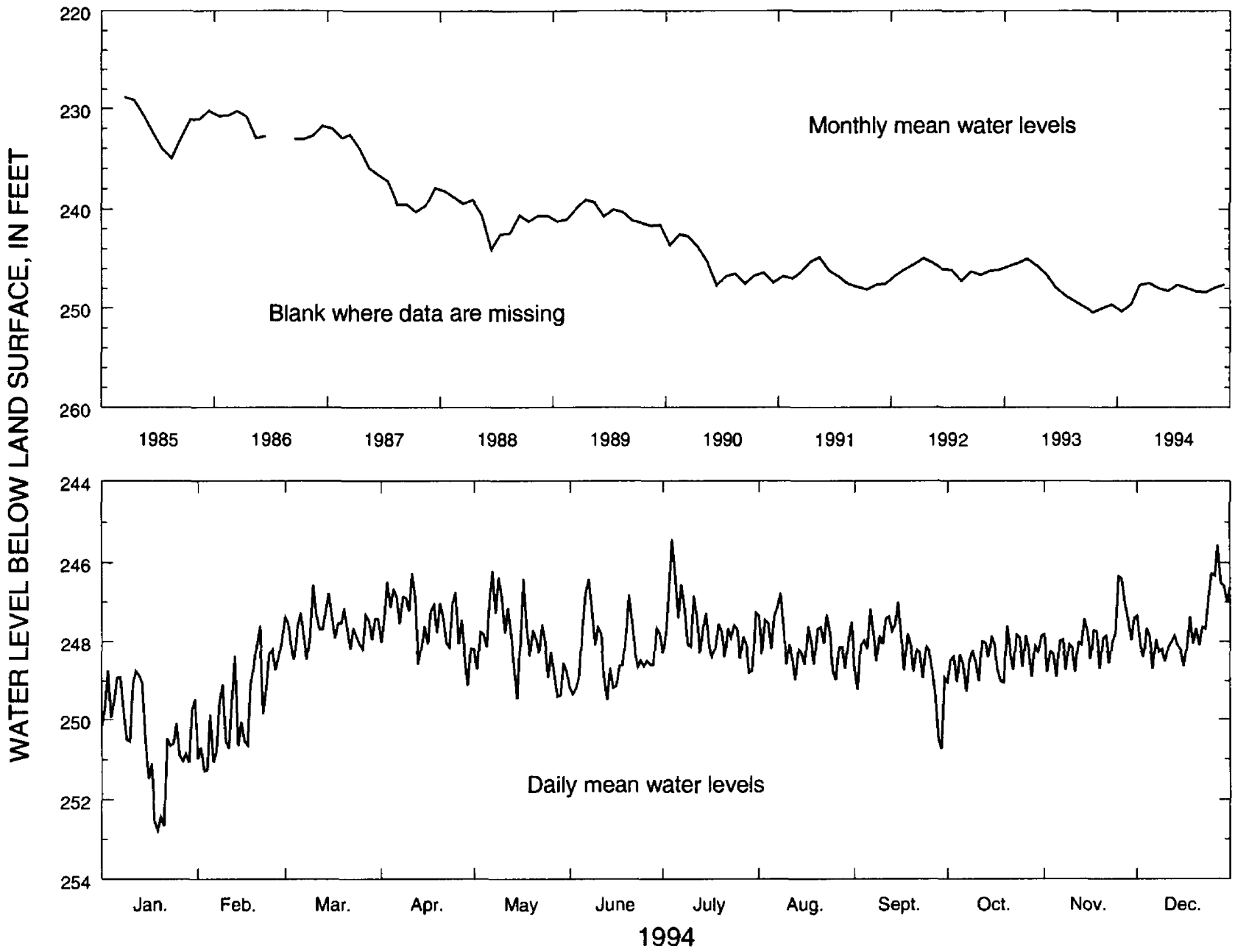


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	126.41	126.15	125.89	125.90	126.20	126.68	126.75	126.73	126.89	126.72	126.62	126.32
MEAN	126.54	126.38	126.03	126.03	126.43	126.76	126.82	126.87	126.98	126.85	126.71	126.56
LOW	126.65	126.55	126.21	126.22	126.67	126.90	126.88	126.97	127.15	127.15	126.79	126.67

SUMMARY FOR 1994 HIGH 125.89 (Mar. 25, 1994) MEAN 126.58 LOW 127.15 (Sept. 30, 1994)

Figure 86.—Water level in observation well 30AA04, Richmond County.

325848082480901 Local number, 23X027.
LOCATION.—Lat 32°58′48″, long 82°48′08″, Hydrologic Unit 03070102.
SITE NAME.—City of Sandersville, well 8.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Dublin-Midville aquifer system.
WELL CHARACTERISTICS.—Drilled unused municipal well, diameter 8 in., depth 750 ft, cased to 480 ft, screened intervals, 480-485 ft, 605-610 ft, 650-655 ft, 695-700 ft, and 740-745 ft. Lower screens probably caved.
DATUM.—Altitude of land-surface datum is 450 ft.
REMARKS.—None.
PERIOD OF RECORD.—March 1985 to current year. Continuous record since March 1985.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 227.68 ft below land-surface datum, April 9, 1985; lowest, 252.77 ft below land-surface datum, January 19,1994.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	248.73	247.60	246.56	246.26	246.19	246.41	245.42	246.76	247.00	247.60	246.34	245.56
MEAN	250.35	249.63	247.63	247.47	247.97	248.26	247.66	247.98	248.33	248.41	247.94	247.62
LOW	252.77	251.29	248.46	249.12	249.47	249.48	248.78	248.97	250.75	249.28	248.90	248.68

SUMMARY FOR 1994 HIGH 245.42 (July 4, 1994) MEAN 248.26 LOW 252.77 (Jan. 19, 1994)

Figure 87.—Water level in observation well 23X027, Washington County.

Paleozoic-Rock Aquifers

The water level in an unconfined Paleozoic aquifer in Walker County (fig. 88) was monitored in well 03PP01 in 1994 (fig. 89). In this area, water levels in wells tapping the Paleozoic-rock aquifers are affected mainly by precipitation and local pumping. Precipitation can cause rapid rises in water levels in areas where thin regolith overlies aquifers having secondary openings (fractures or solution openings), and the effect is illustrated in the hydrograph of daily mean water levels for well 03PP01 (fig. 89). The annual mean water level in this well was 2.6 ft higher in 1994 than in 1993.

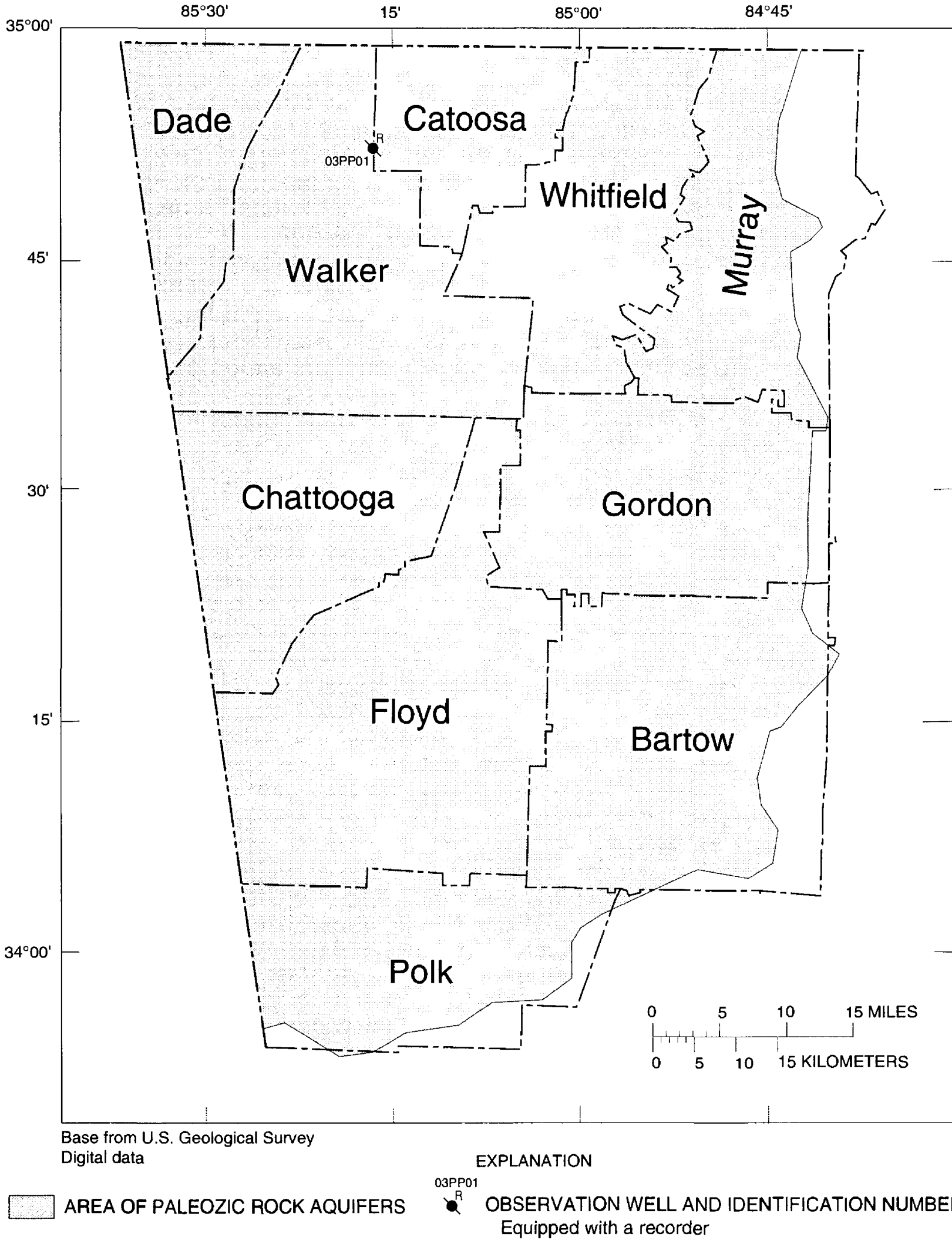
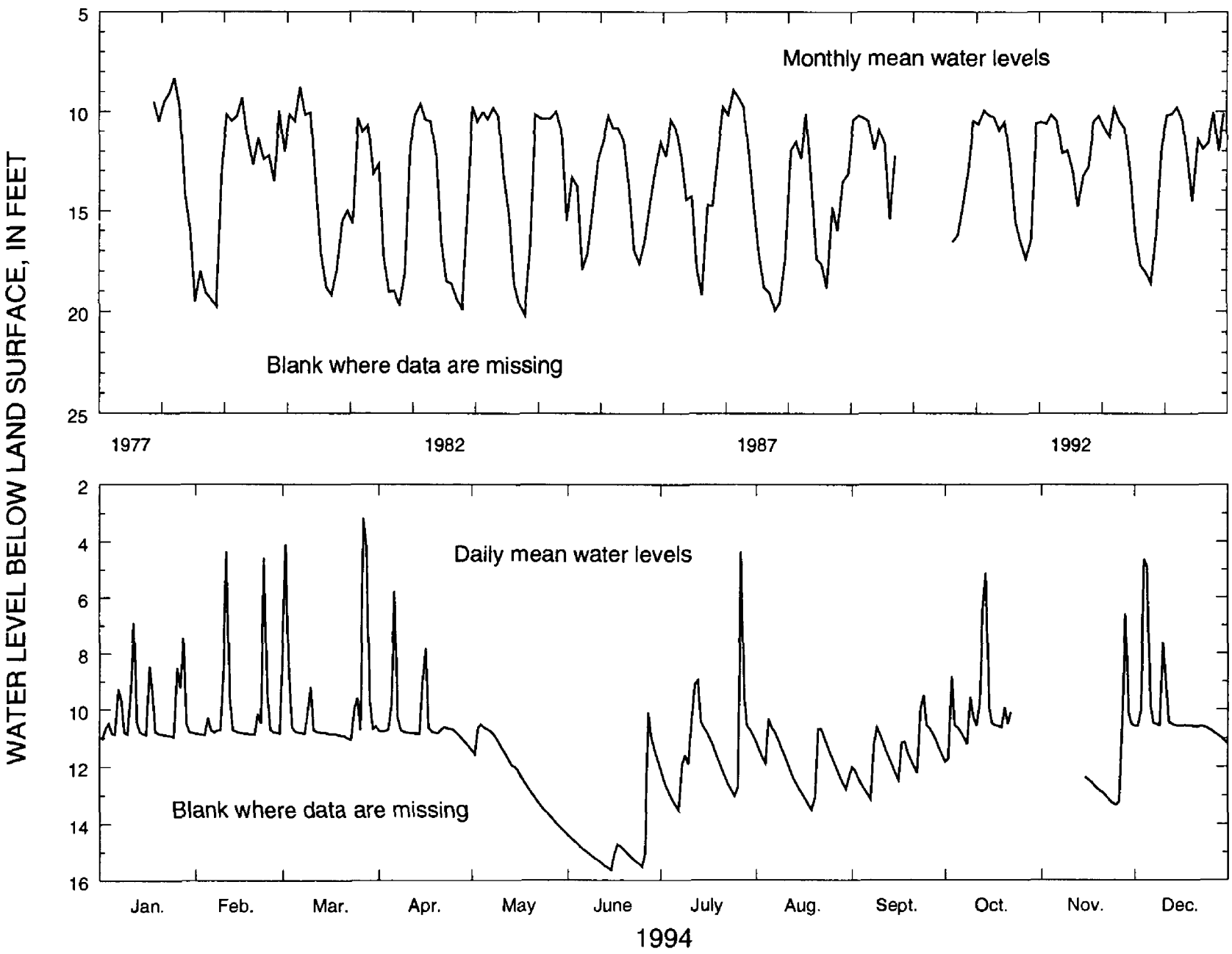


Figure 88.—Location of observation well completed in the Paleozoic rock aquifers.

345403085160001 Local number, 03PP01.
LOCATION.—Lat 34°54′08″, long 85°16′00″, Hydrologic Unit 06020001.
SITE NAME.—National Park Service, Chickamauga Battlefield Park.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Paleozoic Rock (Chickamauga Limestone).
WELL CHARACTERISTICS.—Cable-tooled, observation well, diameter 8 in., depth 72 ft, cased to 11 ft, open hole.
DATUM.—Altitude of land-surface datum is 730 ft.
REMARKS.—Water levels for period, October 23 to November 14, are missing.
PERIOD OF RECORD.—November 1977 to current year. Continuous record since November 1977.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 1.97 ft below land-surface datum, March 9, 1978; lowest, 21.70 ft below land-surface datum, August 5, 1978.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	6.89	4.36	3.18	5.78	10.52	10.10	4.35	10.31	9.50	------	------	4.61
MEAN	10.19	10.11	9.79	10.43	12.29	14.54	11.40	11.89	11.58	------	------	10.08
LOW	11.02	10.88	11.05	11.28	14.29	15.64	13.52	13.51	13.14	------	------	11.20

SUMMARY FOR 1994 HIGH 3.18 (Mar. 27, 1994) MEAN 11.19 LOW 15.64 (June 15, 1994)

Figure 89.—Water level in observation well 03PP01, Walker County.

Crystalline-Rock Aquifers

Water levels in the crystalline-rock aquifers (fig. 90) were monitored in eight wells in 1994 and five of which are summarized in figures 91-95. Water levels in wells tapping the crystalline-rock aquifers are affected mainly by precipitation and evapotranspiration, and locally by pumping. Precipitation can cause rapid rises in water levels in areas where thin regolith overlies aquifers having secondary openings, and the effect is illustrated in the hydrograph for well 11FF04 (fig. 93). The annual mean water levels in these wells (figs. 91-95) ranged from 1.5 ft lower to 0.6 ft higher in 1994 than in 1993. The water level in well 10DD02 increased rapidly in early July, coinciding with rainfall associated with Tropical Storm Alberto (Hicks, 1995).

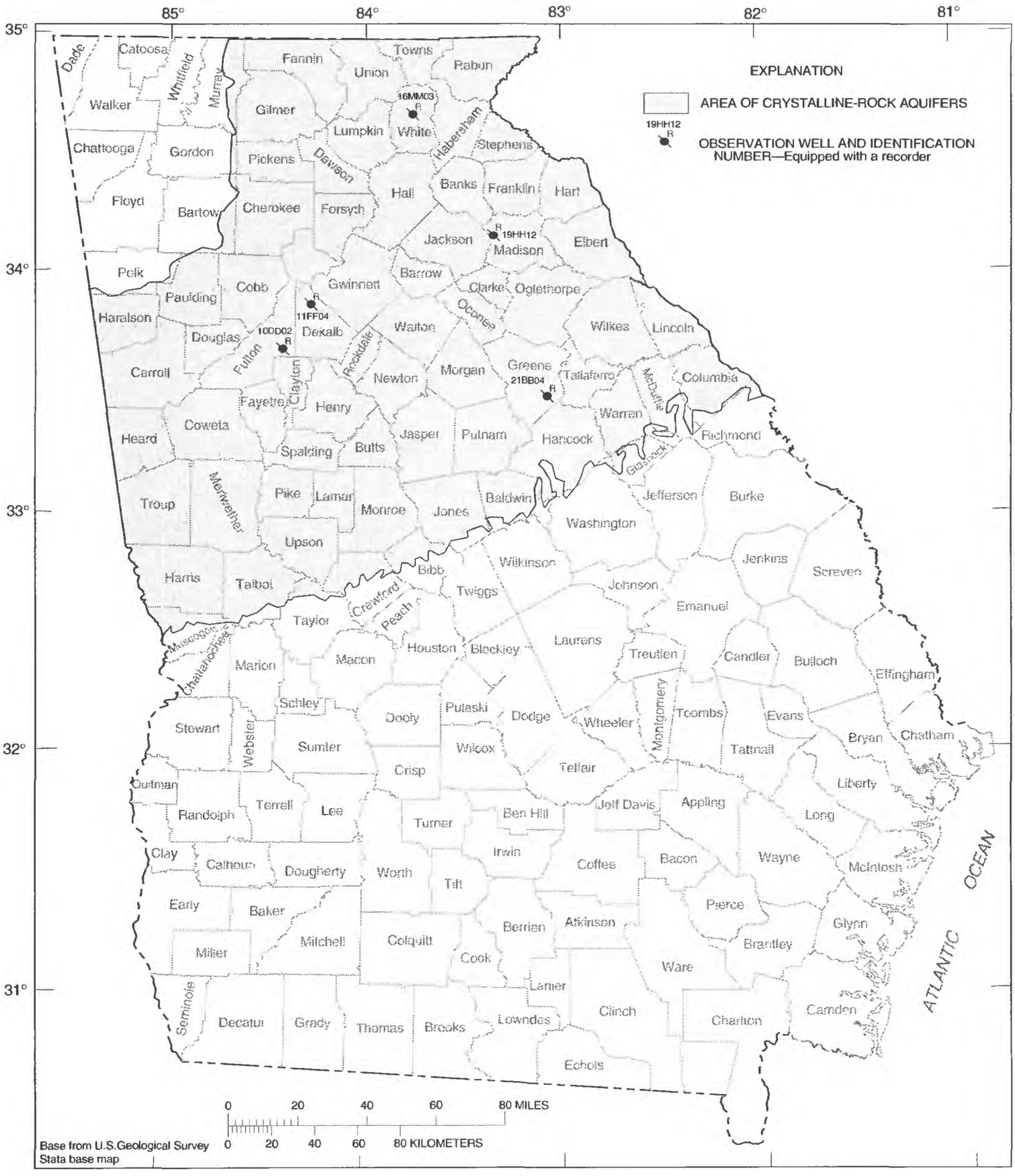
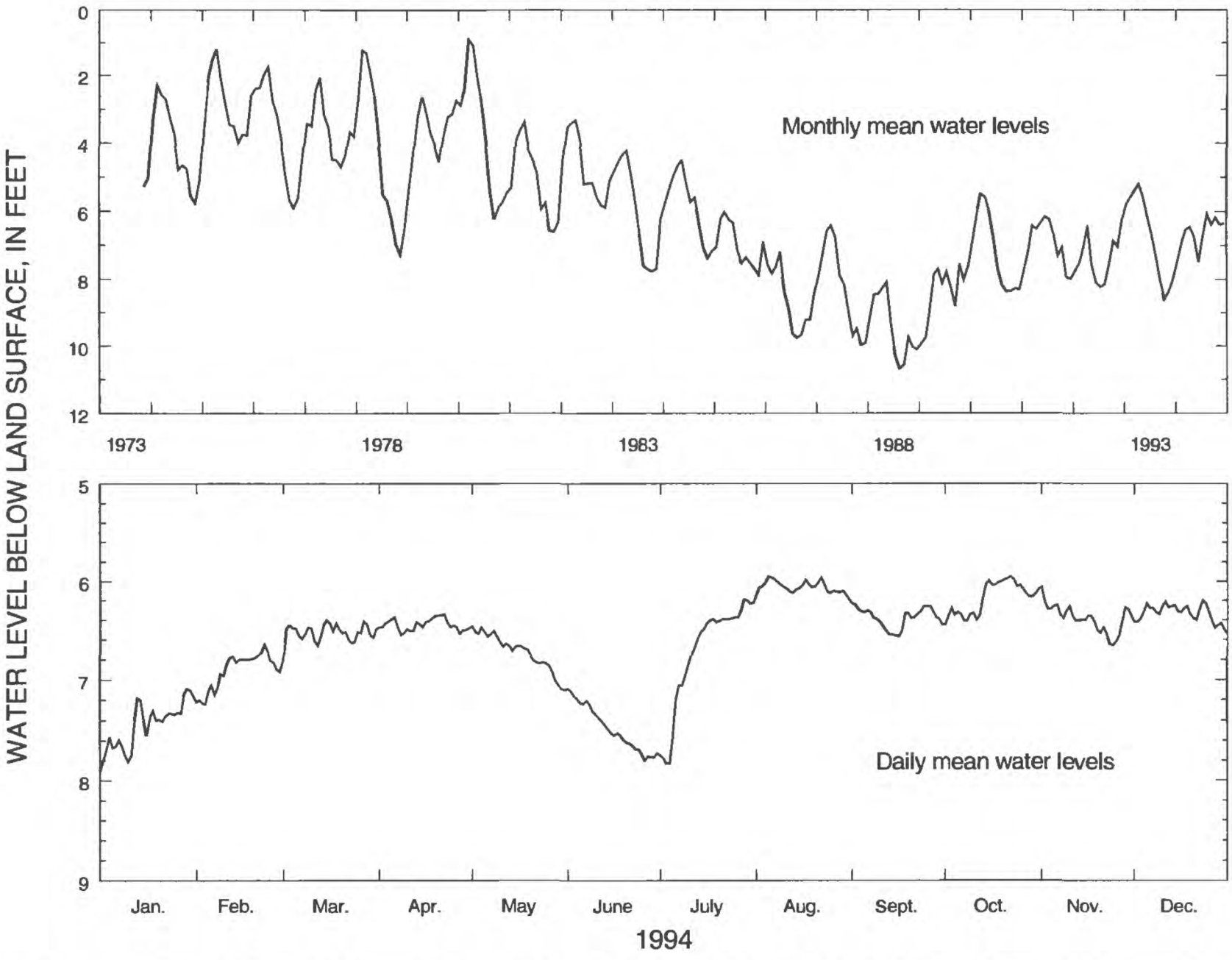


Figure 90.—Locations of observation wells completed in crystalline-rock aquifers.

334207084254801 Local number, 10DD02.
LOCATION.—Lat 33°42′07″, long 84°25′48″, Hydrologic Unit 03130002.
SITE NAME.—U.S. Army, Fort McPherson.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Crystalline rock (Biotite gneiss).
WELL CHARACTERISTICS.—Drilled, unused supply well, diameter 12 in., depth 338 ft, cased to 41 ft, open hole.
DATUM.—Altitude of land-surface datum is 1,013 ft.
REMARKS.—None.
PERIOD OF RECORD.—November 1973 to current year. Continuous record since November 1973.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 0.10 ft below land-surface datum, March 30, 1980; lowest, 10.95 ft below land-surface datum, September 2, 1988.

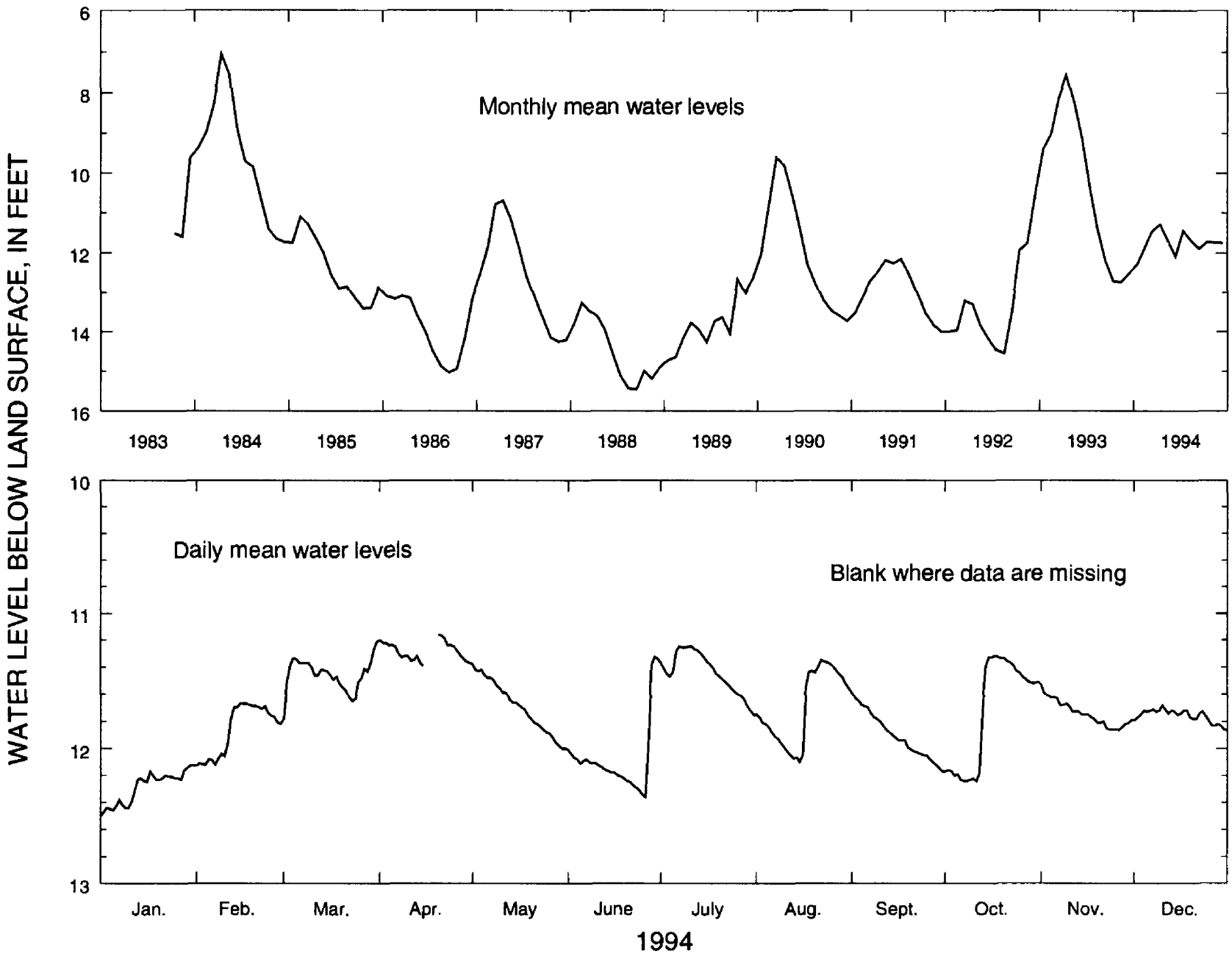


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	7.09	6.65	6.40	6.34	6.46	7.09	6.19	5.95	6.23	5.95	6.06	6.20
MEAN	7.45	6.91	6.53	6.45	6.72	7.48	6.72	6.06	6.38	6.17	6.39	6.33
LOW	7.90	7.24	6.80	6.55	7.10	7.80	7.83	6.19	6.57	6.45	6.66	6.54

SUMMARY FOR 1994 HIGH 5.95 (Aug. 5, 1994) MEAN 6.63 LOW 7.90 (Jan. 1, 1994)

Figure 91.—Water level in observation well 10DD02, Fulton County.

341020083201701 Local number, 19HH12.
LOCATION.—Lat 34°10′20″, long 83°20′17″, Hydrologic Unit 03060104.
SITE NAME.—Meadowlake Estates.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Crystalline rock.
WELL CHARACTERISTICS.—Drilled, unused supply well, diameter 6 in., depth 185 ft, cased to 50 ft, open hole.
DATUM.—Altitude of land-surface datum is 800 ft.
REMARKS.—Water levels for period, April 16-19, are missing.
PERIOD OF RECORD.—October 1983 to current year. Continuous record since October 1983.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 6.69 ft below land-surface datum, April 14, 1984; lowest, 15.56 ft below land-surface datum, September 2-3, 1988.

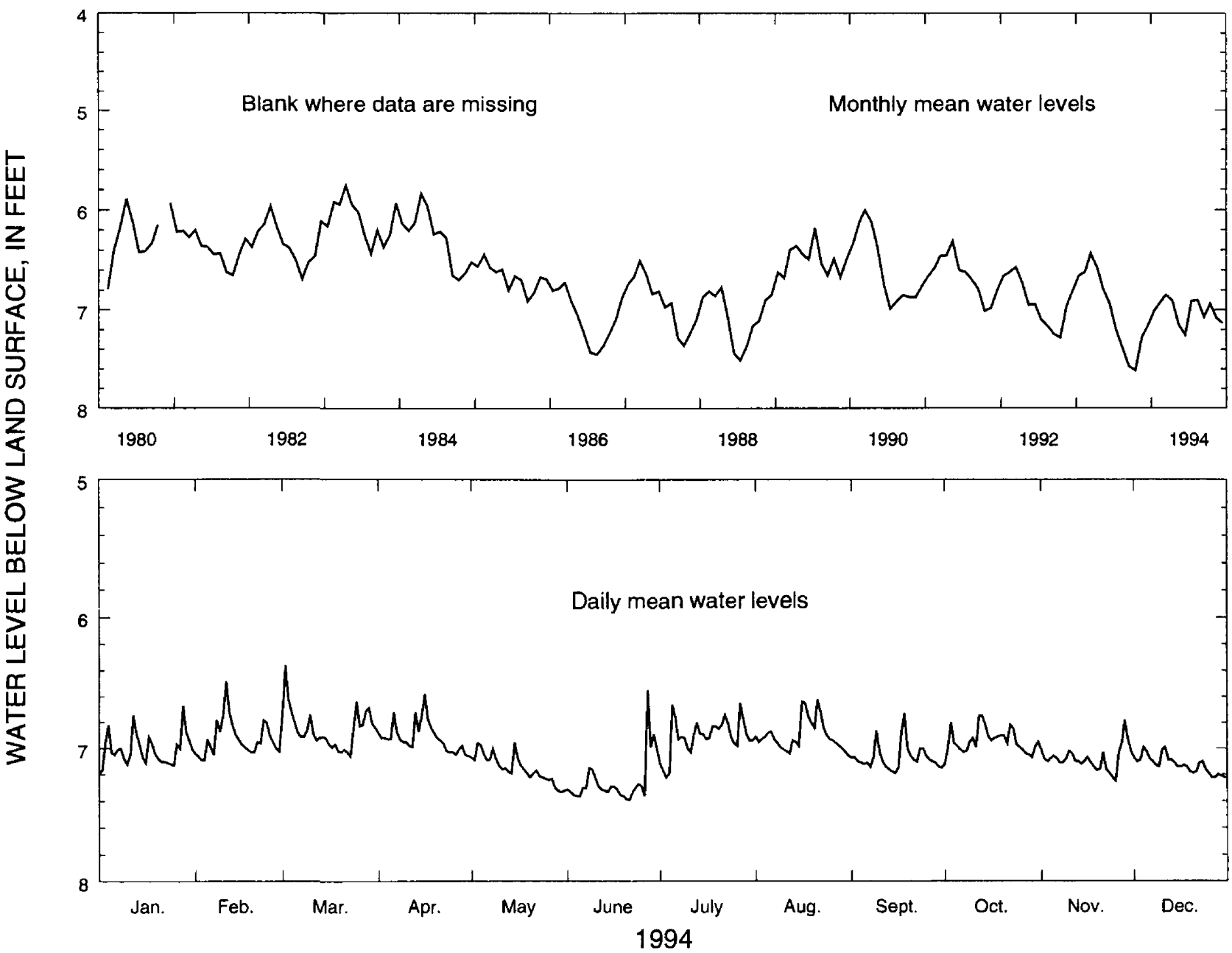


1994	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
HIGH	12.13	11.67	11.21	11.16	11.38	11.33	11.25	11.35	11.59	11.32	11.53	11.68
MEAN	12.29	11.86	11.45	11.28	11.69	12.08	11.44	11.70	11.90	11.73	11.74	11.76
LOW	12.50	12.13	11.78	11.39	12.00	12.36	11.75	12.10	12.17	12.24	11.86	11.86

SUMMARY FOR 1994 HIGH 11.16 (Apr. 20, 1994) MEAN 11.75 LOW 12.50 (Jan. 1, 1994)

Figure 92.—Water level in observation well 19HH12, Madison County.

335517084164001 Local number, 11FF04.
LOCATION.—Lat 33°55′17″, long 84°16′40″, Hydrologic Unit 03130001.
SITE NAME.—U.S. Geological Survey, test well 5.
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Crystalline rock.
WELL CHARACTERISTICS.—Drilled, observation well, diameter 6 in., depth 620 ft, cased to 36 ft, open hole.
DATUM.—Altitude of land-surface datum is 950 ft.
REMARKS.—None.
PERIOD OF RECORD.—February 1980 to current year. Continuous record since February 1980.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 4.98 ft below land-surface datum, March 17, 1990; lowest, 7.77 ft below land-surface datum, October 14, 1993.

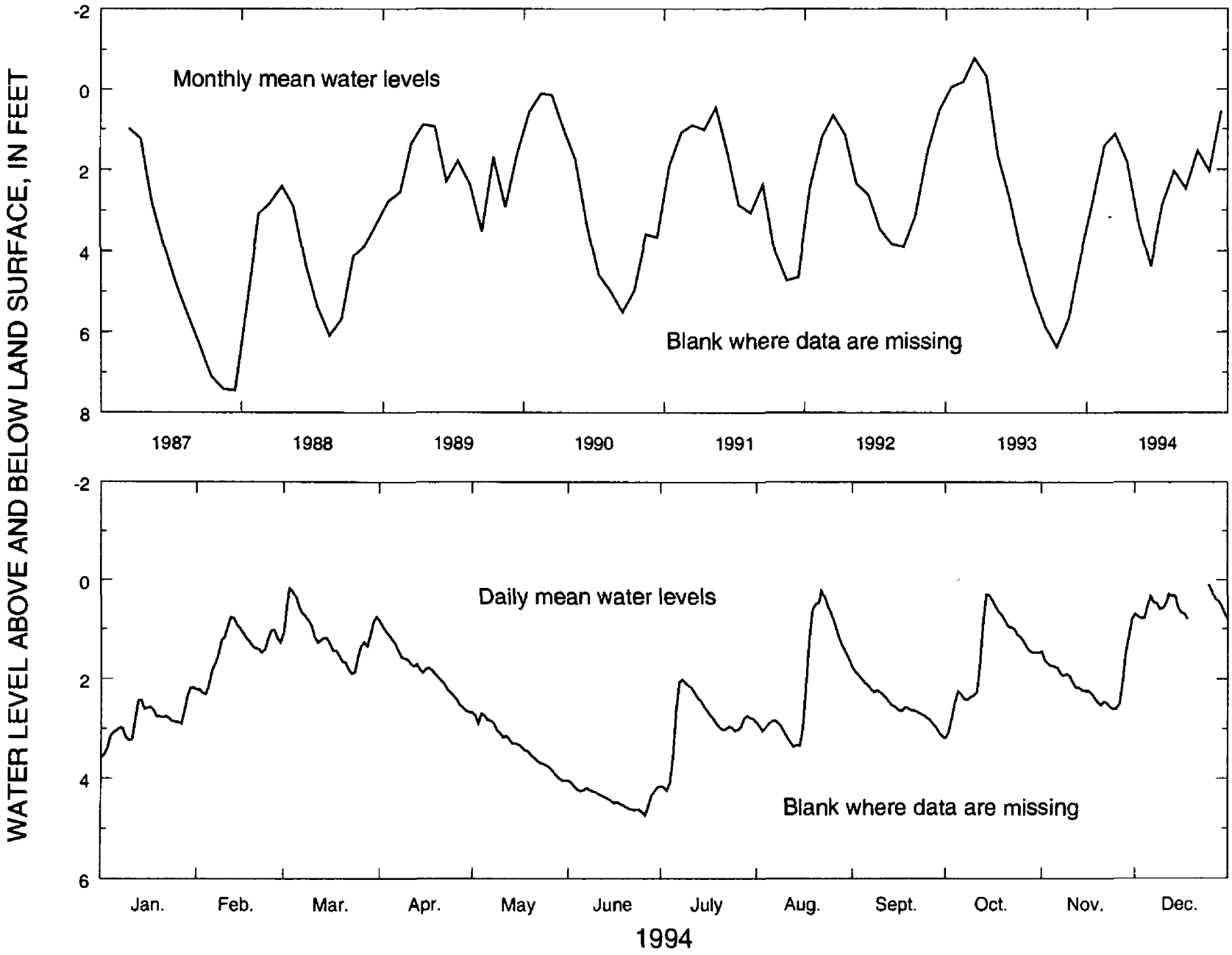


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	6.67	6.48	6.36	6.58	6.95	6.55	6.65	6.62	6.73	6.75	6.78	6.99
MEAN	7.01	6.92	6.85	6.91	7.15	7.25	6.91	6.90	7.07	6.94	7.08	7.13
LOW	7.19	7.09	7.06	7.06	7.33	7.39	7.22	7.06	7.19	7.12	7.25	7.22

SUMMARY FOR 1994 HIGH 6.36 (Mar. 2, 1994) MEAN 7.01 LOW 7.39 (June 21, 1994)

Figure 93.—Water level in observation well 11FF04, Dekalb County.

332808083010201 Local number, 21BB04.
LOCATION.—Lat 33°28′08″, long 83°01′02″, Hydrologic Unit 03070101.
SITE NAME.—Charles Veazey.
INSTRUMENTATION.—Analog recorder.
AQUIFER.—Crystalline rock.
WELL CHARACTERISTICS.—Drilled, unused supply well, diameter 6 in., depth 497 ft, cased to 15 ft, open hole.
DATUM.—Altitude of land-surface datum is 675 ft.
REMARKS.—Water levels for period, December 19-24, are missing.
PERIOD OF RECORD.—March 1987 to current year. Continuous record since March 1987.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 1.25 ft above land-surface datum, March 28, 1993; lowest, 7.58 ft below land-surface datum, December 7, 1987.

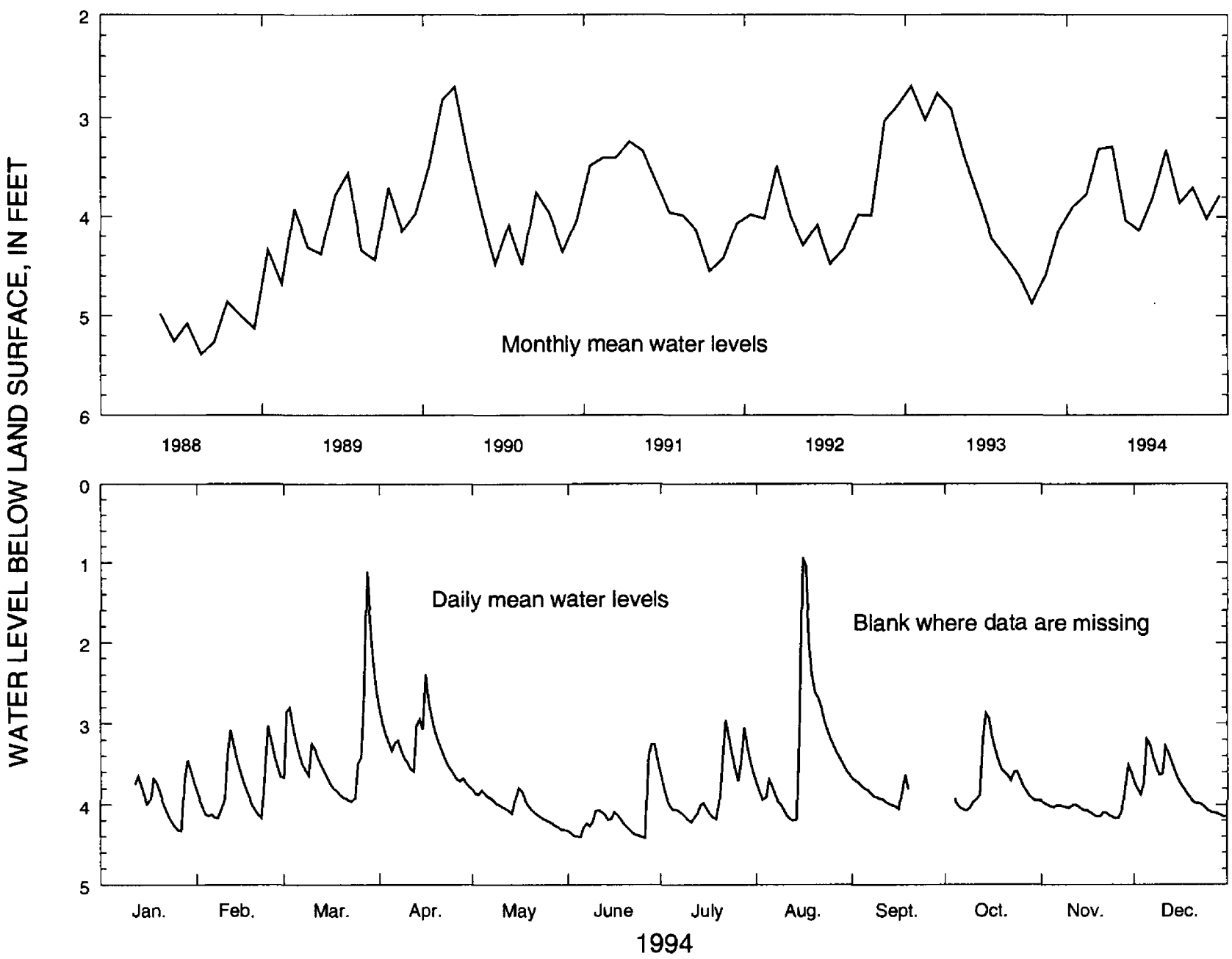


1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	2.17	0.76	0.17	0.83	2.67	4.04	2.01	0.22	1.77	0.30	0.80	0.09
MEAN	2.84	1.40	1.12	1.81	3.33	4.38	2.87	2.03	2.48	1.54	2.04	0.53
LOW	3.57	2.30	1.89	2.66	4.04	4.73	4.23	3.35	3.15	3.18	2.60	0.80

SUMMARY FOR 1994 HIGH 0.09 (Dec. 25,.1994) MEAN 2.23 LOW 4.73 (June 26, 1994)

Figure 94.—Water level in observation well 21BB04, Greene County.

344314083433201 Local number, 16MM03.
LOCATION.—Lat 34°43'14", long 83°43'32", Hydrologic Unit 03130001.
SITE NAME.—*Unicoi State Park, well 4.*
INSTRUMENTATION.—Digital recorder.
AQUIFER.—Crystalline rock.
WELL CHARACTERISTICS.—Drilled, unused supply well, diameter 6.25 in., depth 400 ft, cased to 72 ft, open hole.
DATUM.—Altitude of land-surface datum is 1550 ft.
REMARKS.—Water levels for periods, January 1-11 and September 20 to October 3, are missing.
PERIOD OF RECORD.—May 1988 to current year. Continuous record since May 1988.
EXTREMES FOR PERIOD OF RECORD.—Highest water level, 0.74 ft above land-surface datum, March 17, 1989; lowest, 5.59 ft below land-surface datum, September 2, 1988.



1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
HIGH	------	3.03	1.11	2.39	3.79	3.26	2.96	0.94	------	2.87	3.51	3.19
MEAN	------	3.77	3.31	3.29	4.04	4.14	3.81	3.32	------	3.70	4.02	3.78
LOW	------	4.17	3.96	3.78	4.32	4.42	4.22	4.20	------	4.07	4.17	4.15

SUMMARY FOR 1994 HIGH 0.94 (Aug. 16, 1994) MEAN 3.74 LOW 4.42 (June 26, 1994)

Figure 95.—Water level in observation well 16MM03, White County.

CHLORIDE CONCENTRATION IN WATER FROM THE FLORIDAN AQUIFER SYSTEM

Chloride concentration in water from the Floridan aquifer system has been monitored in coastal Georgia since the 1950's. During 1994, water samples were collected from 20 wells that tap the Floridan aquifer system in the Savannah and Brunswick areas and analyzed for chloride concentration. Graphs of chloride concentration in water for 13 of these wells (fig. 96; table 4) are shown in figures 97, 99, and 100. Although chloride concentration may fluctuate in the intervals between sample-collection periods, measured points on these plots are connected by straight lines to assist visualization. Chloride concentration in water from the Upper Floridan aquifer in most of the coastal Georgia area is less than 40 milligrams per liter (mg/L) (Clarke and others, 1990, p. 48), which is lower than the 250 mg/L drinking-water standard established by the Georgia Department of Natural Resources (1977) and the U.S. Environmental Protection Agency (1990). Chloride concentration in water from the Upper Floridan aquifer that exceeds drinking-water standards has been detected in the Brunswick area. Water in the Lower Floridan aquifer generally has high chloride concentration in the Savannah and Brunswick areas. Chloride concentration in water from the Fernandina permeable zone at the base of the Lower Floridan aquifer has been measured as high as 30,000 mg/L (Krause and Randolph, 1989, p. D51).

Table 4.—Observation wells for which chloride-concentration graphs are included in this report

County	Aquifer	Well number	Site name
Chatham	Lower Floridan	38Q196	USGS, test well 1 point 2
Chatham	Lower Floridan	39Q017	USGS, test well 7 point 1
Chatham	Lower Floridan	39Q018	USGS, test well 7 point 2
Chatham	Lower Floridan	38Q004	USGS, test well 4
Chatham	Upper Floridan	37Q185	GGS, Hutchinson Island, test well 1
Glynn	Upper Floridan, upper water-bearing zone	34H393	USGS, test well 17
Glynn	Upper Floridan, lower water-bearing zone	34H403	USGS, test well 24
Glynn	Lower Floridan	34H399	USGS, test well 19
Glynn	Lower Floridan	34H391	USGS, test well 16
Glynn	Upper Floridan, upper water-bearing zone	34H469	USGS, test well 2
Glynn	Upper Floridan, upper water-bearing zone	34H427	E.M. Champion, well 2
Glynn	Upper Floridan, upper water-bearing zone	33H133	USGS, test well 6
Glynn	Upper Floridan, lower water-bearing zone	33H127	USGS, test well 3

Savannah Area

Twelve wells are currently sampled semi-annually in Chatham County; five of which are summarized in figures 96 and 97. Data from these wells indicate that chloride concentration generally increases with depth below land surface and is not changing appreciably with time (fig. 97).

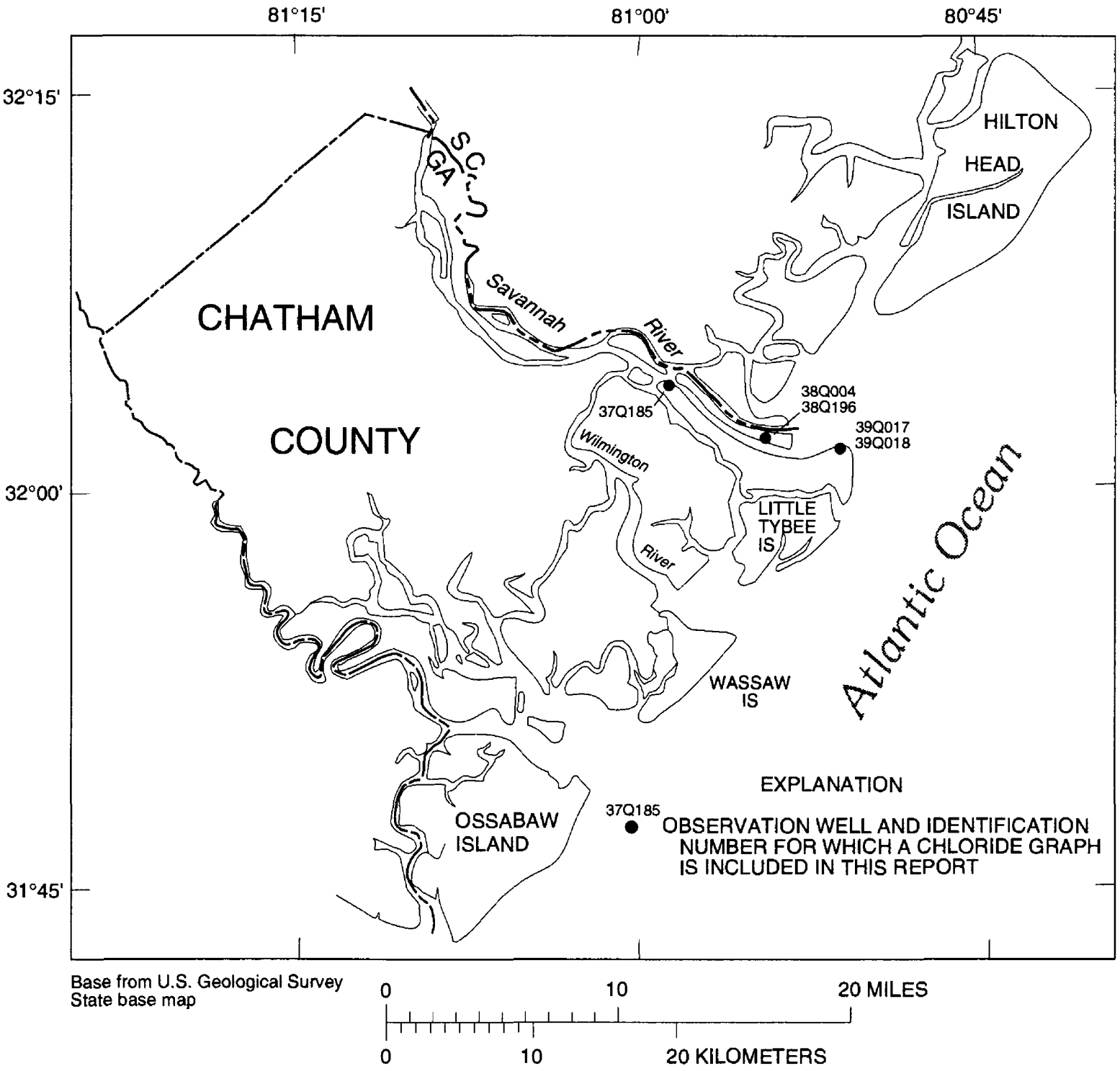


Figure 96.—Locations of chloride monitoring wells completed in the Floridan aquifer in the Savannah area.

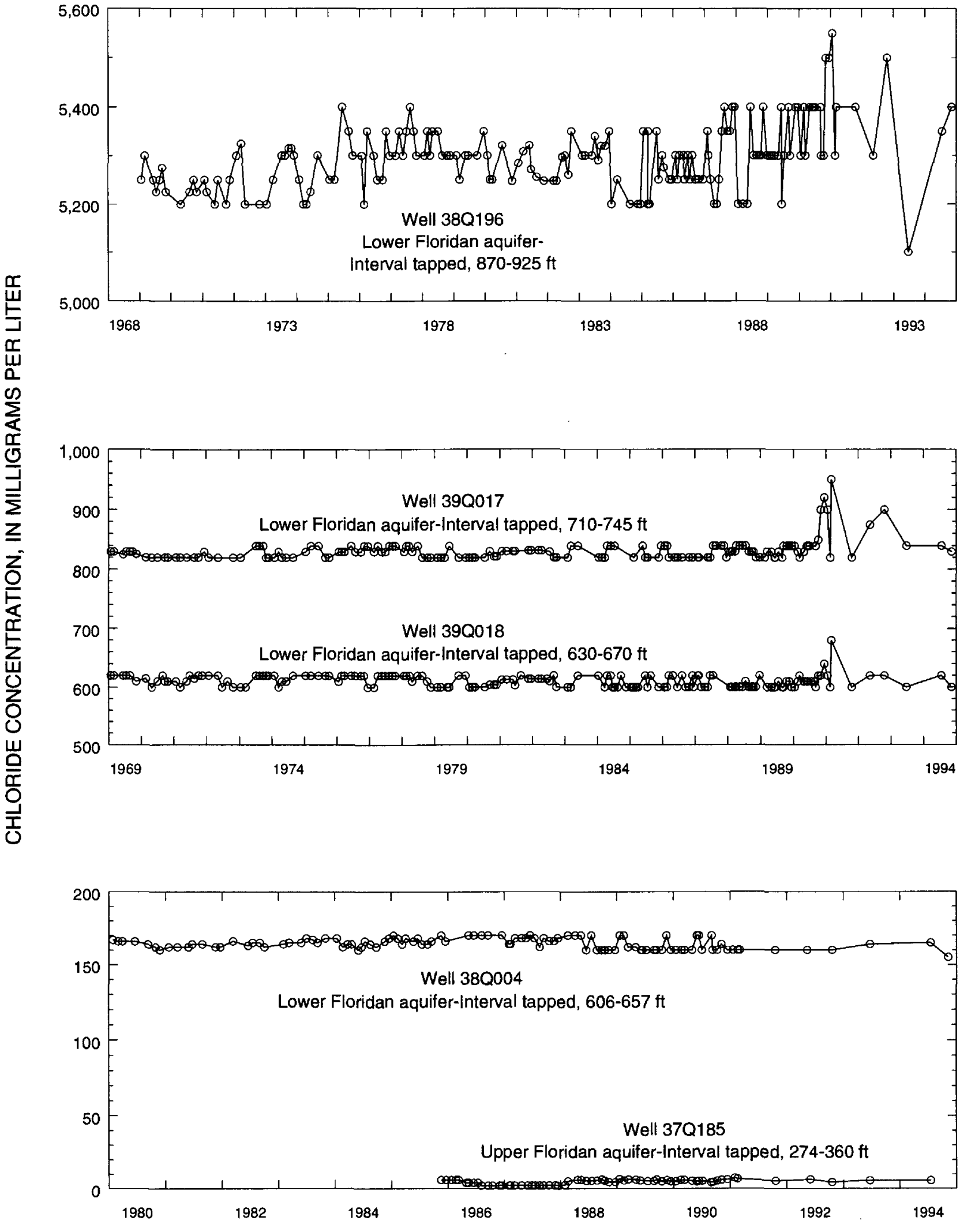


Figure 97.—Chloride concentration in water from the Upper and Lower Floridan aquifers in the Savannah area.

Brunswick Area

Since pumping began in the Brunswick area in the late 1800's, ground-water withdrawal has lowered the water level in the Upper Floridan aquifer (Krause and Randolph, 1989). This water-level decline has allowed saltwater to migrate upward into the Upper Floridan aquifer in Brunswick from the Fernandina permeable zone, which is at the base of the Lower Floridan aquifer (Krause and Randolph, 1989, p. D51). Chloride concentration in water from the upper water-bearing zone of the Upper Floridan aquifer is greater than 2,000 mg/L in parts of Brunswick.

In the Brunswick, Glynn County area, eight wells were pumped and sampled during 1994 for chloride analysis. Graphs of chloride concentration in water from those eight wells tapping various zones of the Floridan aquifer system (located on fig. 98) are shown in figures 99 and 100.

The chloride concentration in water from wells 34H469 and 34H427, which tap the upper water-bearing zone of the Upper Floridan aquifer in the northern Brunswick area, are shown in figure 100. The chloride concentration in water from wells 33H133 and 33H127 (fig. 100) which tap the upper and lower water-bearing zones of the Upper Floridan aquifer, respectively, show an upward trend since sampling began in 1966.

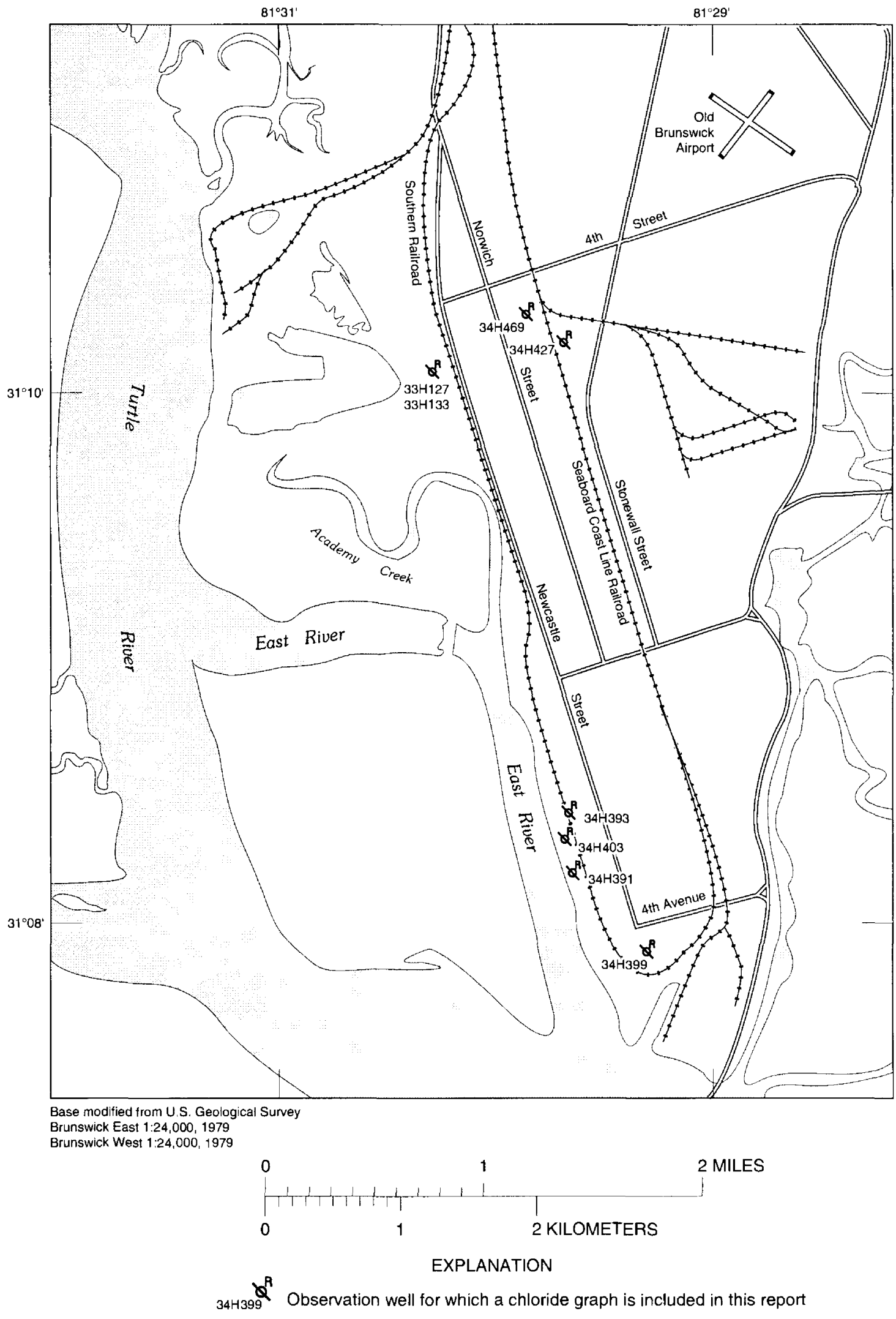


Figure 98.—Locations of chloride-monitoring wells completed in the Floridan aquifer system in the Brunswick area.

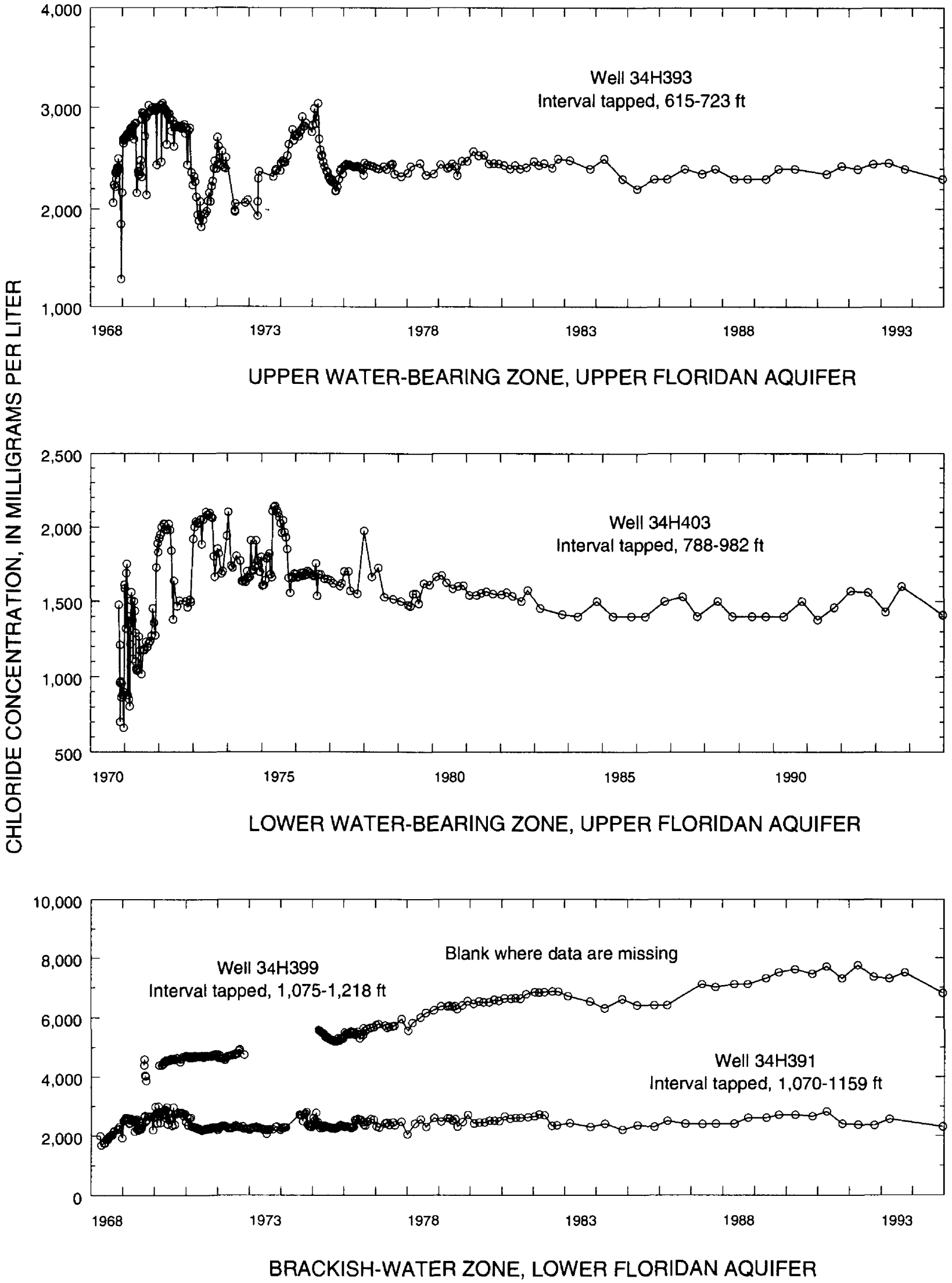


Figure 99.—Chloride concentration in water from the Floridan aquifer system in the southern Brunswick area.

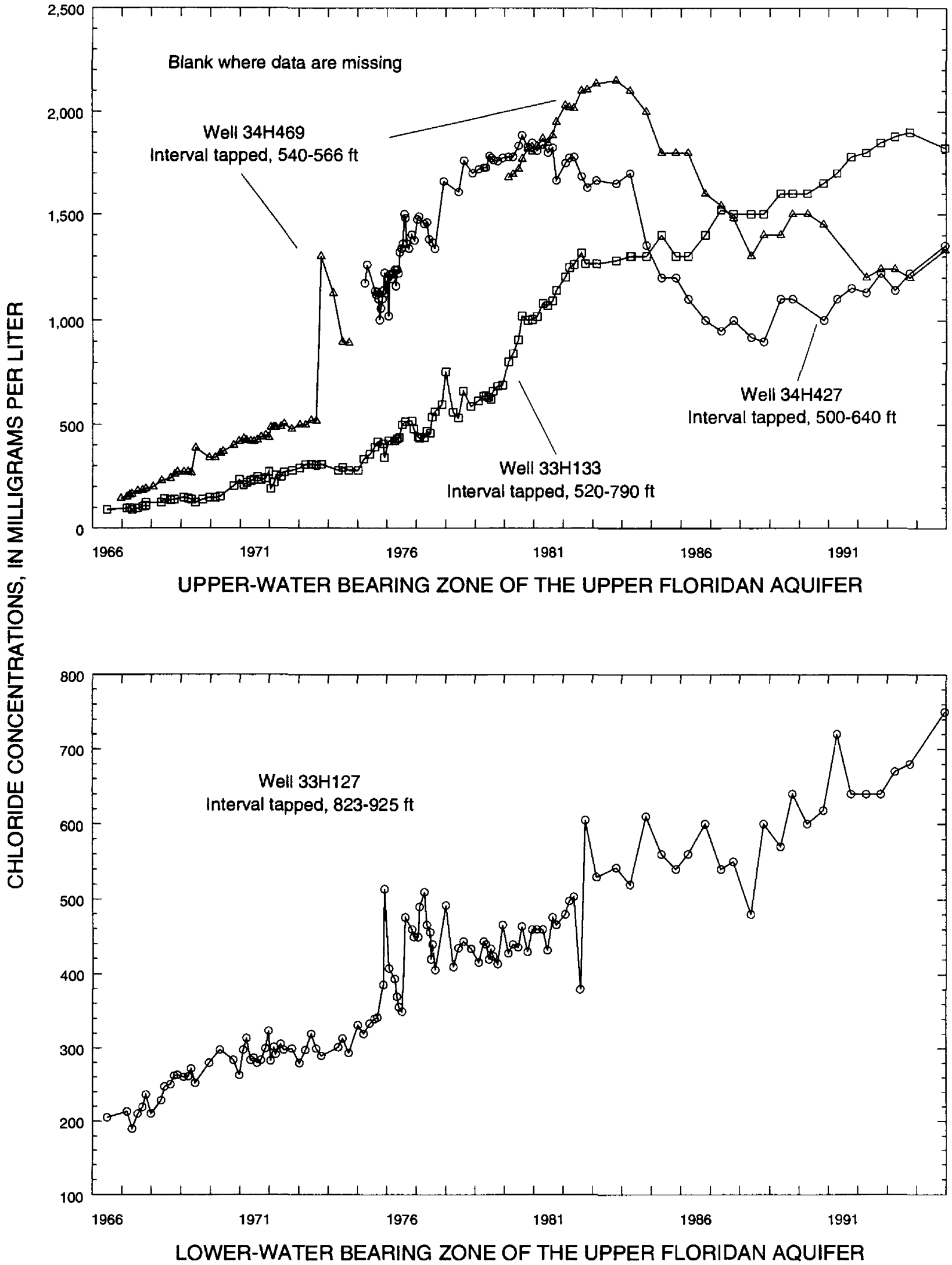


Figure 100.—Chloride concentration in water from the Upper Floridan aquifer in the northern Brunswick area.

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