

GROUND-WATER LEVELS IN WYOMING, JANUARY 1986 THROUGH SEPTEMBER 1995

by JON P. MASON *and* SHARON L. GREEN

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BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY
Gordon P. Eaton, Director

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For additional information
write to:

District Chief
U.S. Geological Survey
Water Resources Division
2617 E. Lincolnway, Suite B
Cheyenne, Wyoming 82001-5662

Copies of this report can be
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14. Niobrara County	86
15. Platte County	95
16. Sweetwater County	108
17. Washakie County	111
18. Weston County	114

CONVERSION FACTORS

Multiply	By	To obtain
acre	0.4047	hectare
foot (ft)	0.3048	meter

GROUND-WATER LEVELS IN WYOMING, JANUARY 1986 THROUGH SEPTEMBER 1995

By Jon P. Mason and Sharon L. Green

ABSTRACT

Water levels were measured in 81 observation wells in 15 counties in Wyoming, as of September 1995. The wells are located mainly in areas where ground water is used in large quantities for irrigation or municipal purposes. The observation-well program is conducted by the U.S. Geological Survey in cooperation with the Wyoming State Engineer's office. Water-level data were collected at 73 of the 81 observation wells by Wyoming State Engineer personnel; data at the remaining 8 wells were collected by the U.S. Geological Survey. This report includes maps showing the location of the observation wells, tables listing well history and highest and lowest water levels for the period of record, and hydrographs showing water-level fluctuations from January 1986 through September 1995 or for the period of record if less than 10 years.

INTRODUCTION

Since 1940 the U.S. Geological Survey (USGS), in cooperation with city, State, and other Federal agencies, periodically has measured ground-water levels in a large number of wells in Wyoming. A more extensive program was started in 1972 to expand the ground-water-level data base throughout the State. Part of the expansion included the installation of continuous water-level recorders in selected wells in the observation-well network. The observation-well program currently is conducted by the USGS in cooperation with the Wyoming State Engineer's office.

Ground-water levels were measured in 81 observation wells in 15 counties in Wyoming, as of September 1995. Water-level data were collected at 73 of the 81 observation wells by Wyoming State Engineer personnel; data at the remaining 8 wells were collected

by the U.S. Geological Survey. The wells are located mainly in areas where ground water is used in large quantities for irrigation or municipal purposes. Water levels were measured in at least one observation well in 15 of the 23 counties in Wyoming. During 1995, a continuous record of water levels was collected from 62 wells equipped with float-driven digital water-level recorders, and a continuous record of hydraulic heads above land surface was obtained from 2 flowing wells equipped with pressure-sensing transducers and electronic data recorders. The remaining 17 wells periodically were measured by hand using a steel tape.

Wyoming water-level data and hydrographs for periods prior to 1994 can be found in 13 previous ground-water reports compiled by the USGS (Ringin, 1973 and 1974; Ballance and Freudenthal, 1975, 1976, and 1977; Stevens, 1978; Ragsdale, 1982; Ragsdale and Oberender, 1985; Kennedy and Oberender, 1987; Kennedy and Green, 1988, 1990, 1992, and 1994).

PRESENTATION OF DATA

The location of counties in Wyoming with the number of observation wells listed in this report is shown in figure 1. The data are presented by county and the counties for which water-level data are available from January 1986 through September 1995 are listed alphabetically. Records of observation wells for each county are listed in a table preceded by a map showing the location of the wells in that county (figs. 4-18). Water-level hydrographs or hydraulic-head hydrographs from January 1986 through September 1995 or for the period of record, if less than 10 years, follow the table for each county.

The hydrographs for the 81 observation wells were plotted using data from either continuous water-level records or periodic water-level measurements. The daily maximum water level was used for plotting hydrographs for wells equipped with continuous recorders. The hydrographs show water-level fluctua-

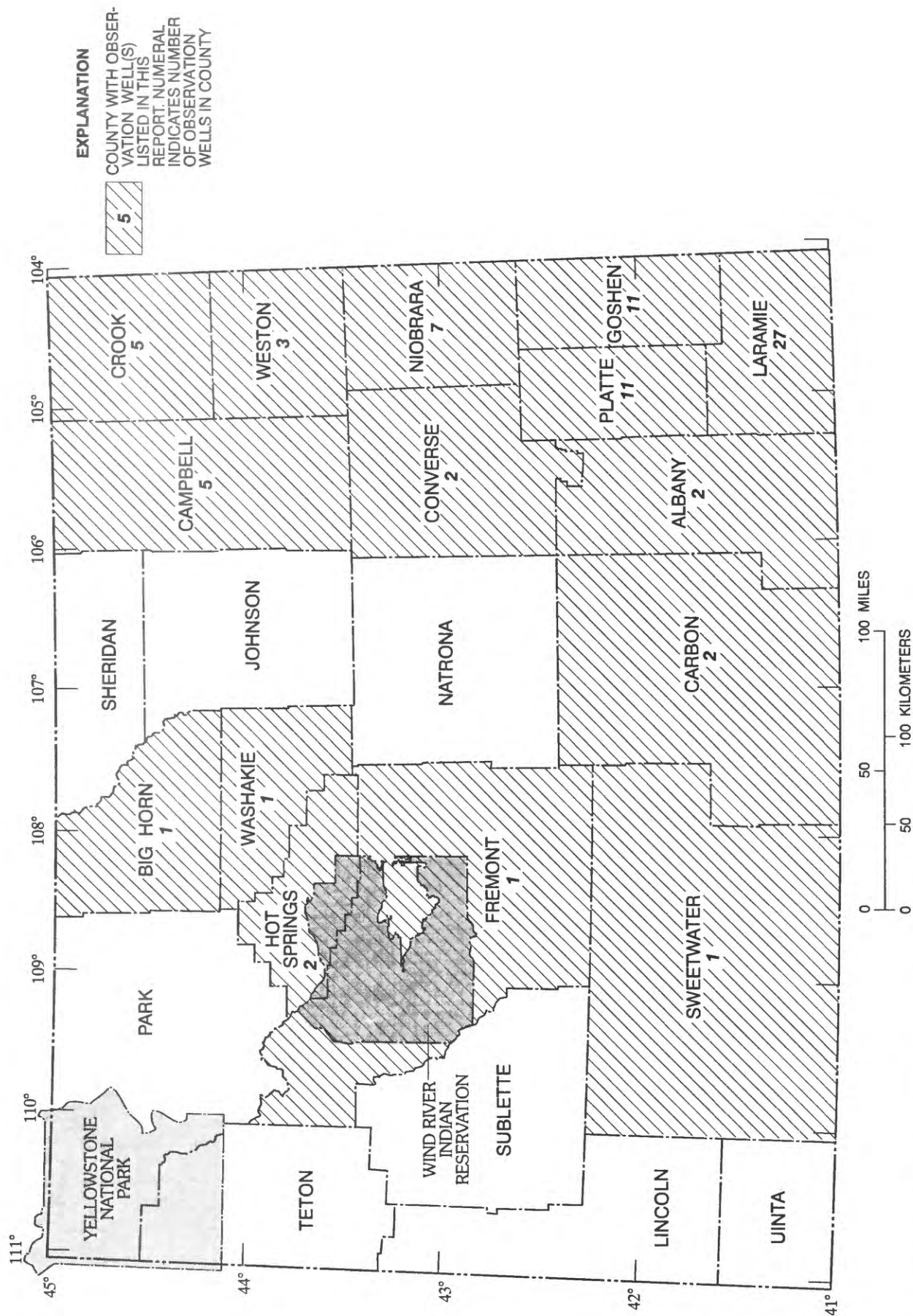


Figure 1. Location of counties in Wyoming with observation wells, as of September 1995.

tions and water-level trends from January 1986 through September 1995. If more precise water levels are needed, tabulations of actual water-level measurements (recorded to the nearest one-hundredth of a foot) are available from the U.S. Geological Survey, 2617 East Lincolnway, Suite B, Cheyenne, Wyoming 82001 (telephone 307/778-2931).

Numbering System for Wells

All wells listed in this report, except for one well located in the Wind River Indian Reservation, are identified according to the Federal township-range system of land subdivision, and are assigned a local number. An example of a local number in this report is 14-63-15aaa01 (fig. 2). The first number (14) denotes the township, the second number (63) denotes the range, and the third number (15) denotes the section. The first letter following the section number denotes the quarter section (160-acre tract); the second letter, the quarter-quarter section (40-acre tract); and the third letter, if shown, the quarter-quarter-quarter section (10-acre tract). These subsections are designated a, b, c, and d in a counter-clockwise direction, beginning in

the northeast quadrant. The last two numbers in the local number are a sequence number indicating the order of inventory. For example, in figure 2, observation well 14-63-15aaa01 is the first well inventoried in the northeast quarter of the northeast quarter of the northeast quarter of section 15, township 14 north (T. 14 N.), range 63 west (R. 63 W.). All wells in the counties have ranges west of the Sixth Principal Meridian, and townships north of the 40th Parallel Base Line.

In the Wind River Indian Reservation, the township-range system is based on the Wind River Meridian and Base Line system. Townships are denoted as north or south of the base line and ranges are denoted as east or west of the meridian (McGreevy and others, 1969). Wells may be located in the northeast, northwest, southwest, or southeast quadrants of this base-line and meridian net. For example, in figure 3, observation well 1N-4E-28acc01 is the first well inventoried in the southwest quarter of the southwest quarter of the northeast quarter of section 28, township 1 north, range 4 east, in the northeast quadrant.

The latitude, longitude, and sequence number (shown in the upper right-hand corner of the hydrograph for each well) is an identification number

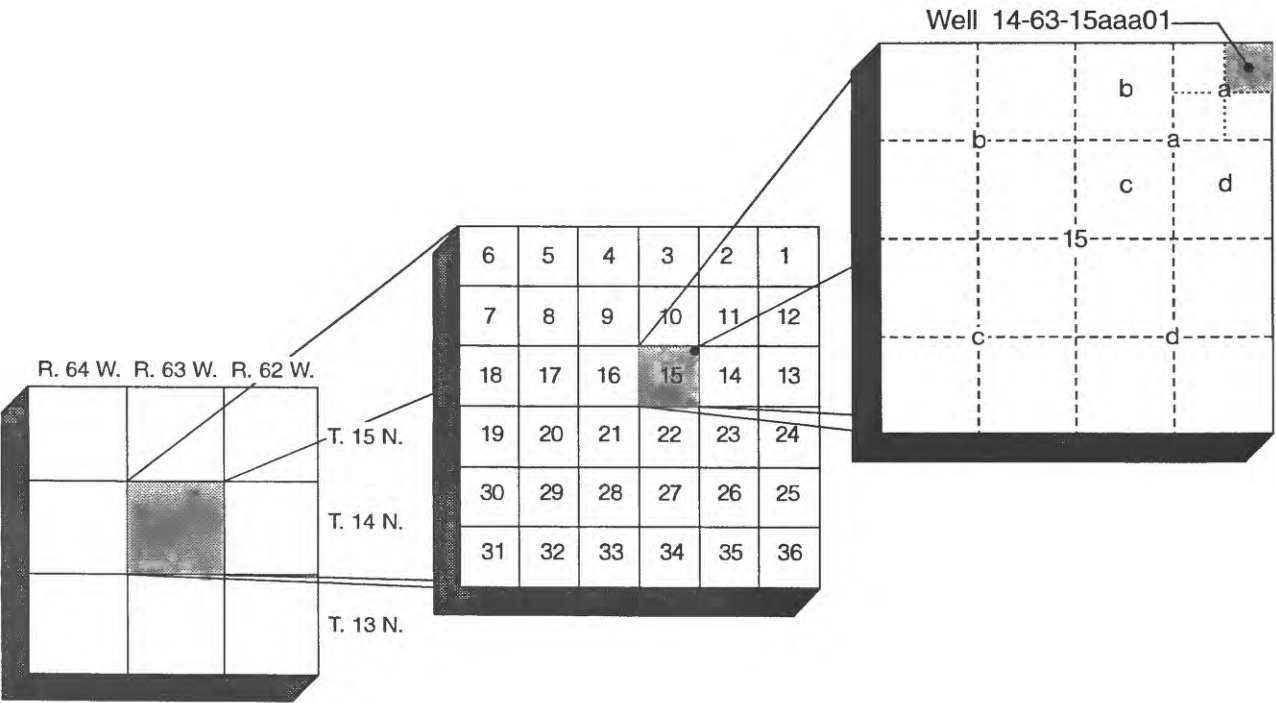


Figure 2. Federal township-range system for numbering wells.

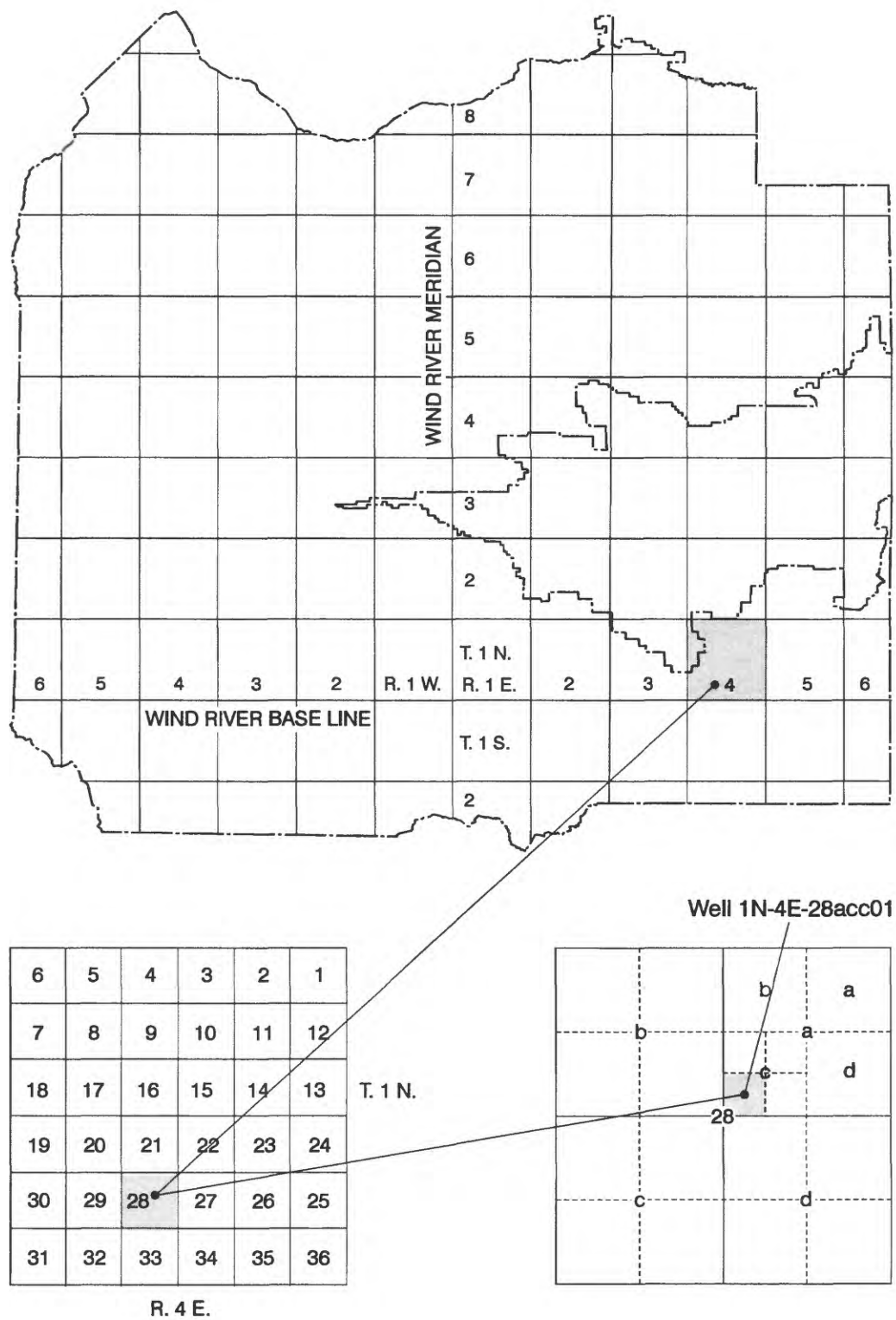


Figure 3. System for numbering wells in the Wind River Indian Reservation.

assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote the degrees, minutes, and seconds of longitude, and the last two digits are a sequence number within a 1-second grid. For example, 411751105312701 refers to the first site inventoried at a location having a latitude of 41 degrees, 17 minutes, and 51 seconds, and a longitude of 105 degrees, 31 minutes, and 27 seconds.

Explanation of Column Headings for Tables of Well Records

Local number: See text description of the well-numbering system.

Well depth: Depth of well, in feet below land surface. Dashes indicate the depth is unknown.

Use of water: H, domestic; I, irrigation; P, municipal; S, stock; U, unused. Dashes indicate the use of water is unknown.

Principal geologic source: The codes for the principal geologic source are from the Water Data Storage and Retrieval System (WATSTORE) of the USGS and may not follow the current usage of the USGS. Dashes indicate the principal geologic source is unknown.

Code	Principal geologic source
	Geologic unit and age
111ALVM	Alluvium (Holocene)
111TRRC	Terrace deposits (Holocene)
121NRPK	North Park Formation (Pliocene)
121OGLL	Ogallala Formation (Miocene)
122ARKR	Arikaree Formation (Miocene and Oligocene)
123BRUL	Brule Formation (Oligocene)
123CDRN	Chadron Formation (Oligocene)
124WDRV	Wind River Formation (Eocene)
124WSTC	Wasatch Formation (Eocene)
125FRUN	Fort Union Formation (Paleocene)
125LEBO	Lebo Member of Fort Union Formation (Paleocene)
211FXHL	Fox Hills Sandstone (Upper Cretaceous)
217LKOT	Lakota Formation (Lower Cretaceous)
311PRKC	Park City Formation ¹ (Permian)
317CSPR	Casper Formation (Permian and Pennsylvanian)
317MNLS	Minnelusa Formation (Permian and Pennsylvanian)
317TSLP	Tensleep Sandstone (Pennsylvanian)
331MDSN	Madison Limestone (Mississippian)
337PHSP	Pahasapa Limestone (Mississippian)
374FLTD	Flathead Sandstone (Cambrian)

¹In Wyoming, the Park City Formation is synonymous with the Phosphoria Formation (Lane, 1973, p. 4).

Record available: Years for which water-level measurements are available.

Water levels or hydraulic heads: The highest and lowest water levels or hydraulic heads are for the period of record and represent the static water levels, in feet below land surface, or hydraulic heads, in feet above land surface, unless otherwise footnoted.

Explanation of Hydrographs

————— Water-level or hydraulic-head data collected by electronic data recorders or pressure transducers. Missing sections of lines indicate periods of no data. Typically, intermittent periods of no data are the result of logging equipment malfunctions.

□- - -□ Individual water-level measurements. Dashed line represents periods of no data between measurements.

The local reference name of the observation well plus any additional information is listed below the hydrograph.

REFERENCES

- Ballance, W.C., and Freudenthal, P.B., 1975, Ground-water levels in Wyoming, 1974: U.S. Geological Survey Open-File Report, 186 p.
- _____, 1976, Ground-water levels in Wyoming, 1975: U.S. Geological Survey Open-File Report 76-598, 170 p.
- _____, 1977, Ground-water levels in Wyoming, 1976: U.S. Geological Survey Open-File Report 77-686, 187 p.
- Kennedy, H.I., and Green, S.L., 1988, Ground-water levels in Wyoming, 1978 through September 1987: U.S. Geological Survey Open-File Report 88-187, 132 p.
- _____, 1990, Ground-water levels in Wyoming, 1980 through September 1989: U.S. Geological Survey Open-File Report 90-106, 132 p.
- _____, 1992, Ground-water levels in Wyoming, 1982 through September 1991: U.S. Geological Survey Open-File Report 92-111, 124 p.
- _____, 1994, Ground-water levels in Wyoming, 1984 through September 1993: U.S. Geological Survey Open-File Report 94-466, 123 p.
- Kennedy, H.I., and Oberender, C.B., 1987, Ground-water levels in Wyoming, 1976-1985: U.S. Geological Survey Open-File Report 87-456, 122 p.
- Lane, D.W., 1973, The Phosphoria and Goose Egg Formations in Wyoming: The Geological Survey of Wyoming, Preliminary Report No. 12, 24 p.
- McGreevey, L.J., Hodson, W.G., and Rucker, S.J., IV, 1969, Ground-water resources of the Wind River Indian Reservation, Wyoming: U.S. Geological Survey Water-Supply Paper 1576-I, 145 p.
- Ragsdale, J.O., 1982, Ground-water levels in Wyoming, 1971 through part of 1980: U.S. Geological Survey Open-File Report 82-859, 200 p.
- Ragsdale, J.O., and Oberender, C.B., 1985, Ground-water levels in Wyoming, 1974 through 1983: U.S. Geological Survey Open-File Report 85-403, 194 p.
- Ringen, B.H., 1973, Records of ground-water levels in Wyoming, 1940-1971: Wyoming State Engineer's Office, Wyoming Water Planning Program Report No. 13, 479 p.
- _____, 1974, Ground-water levels in Wyoming, 1972-73: Wyoming State Engineer's Office, Wyoming Water Planning Program Report No. 13, Supplement No. 1, 158 p.
- Stevens, M.D., 1978, Ground-water levels in Wyoming, 1977: U.S. Geological Survey Open-File Report 78-605, 203 p.

GROUND-WATER LEVELS BY COUNTY

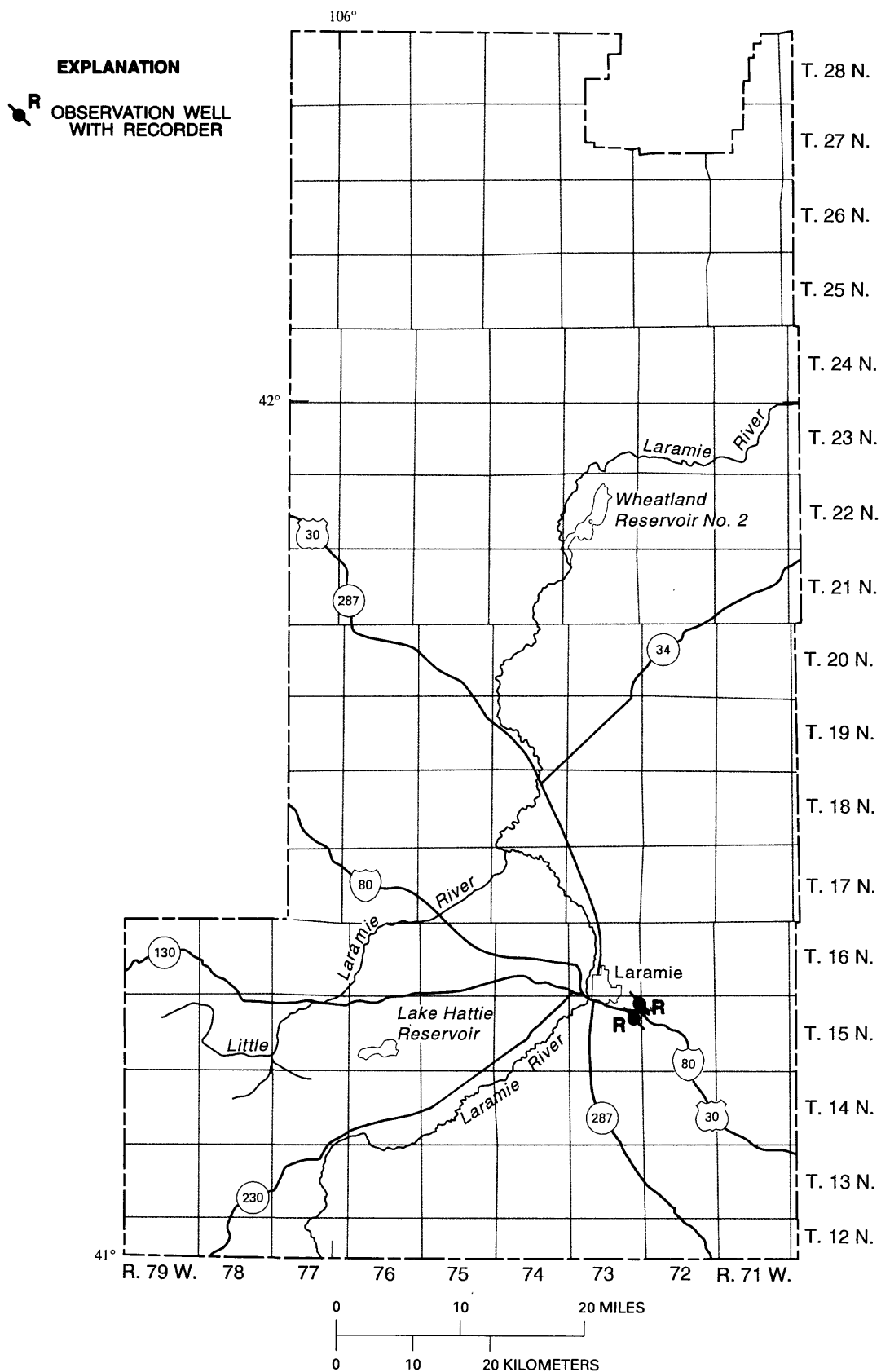
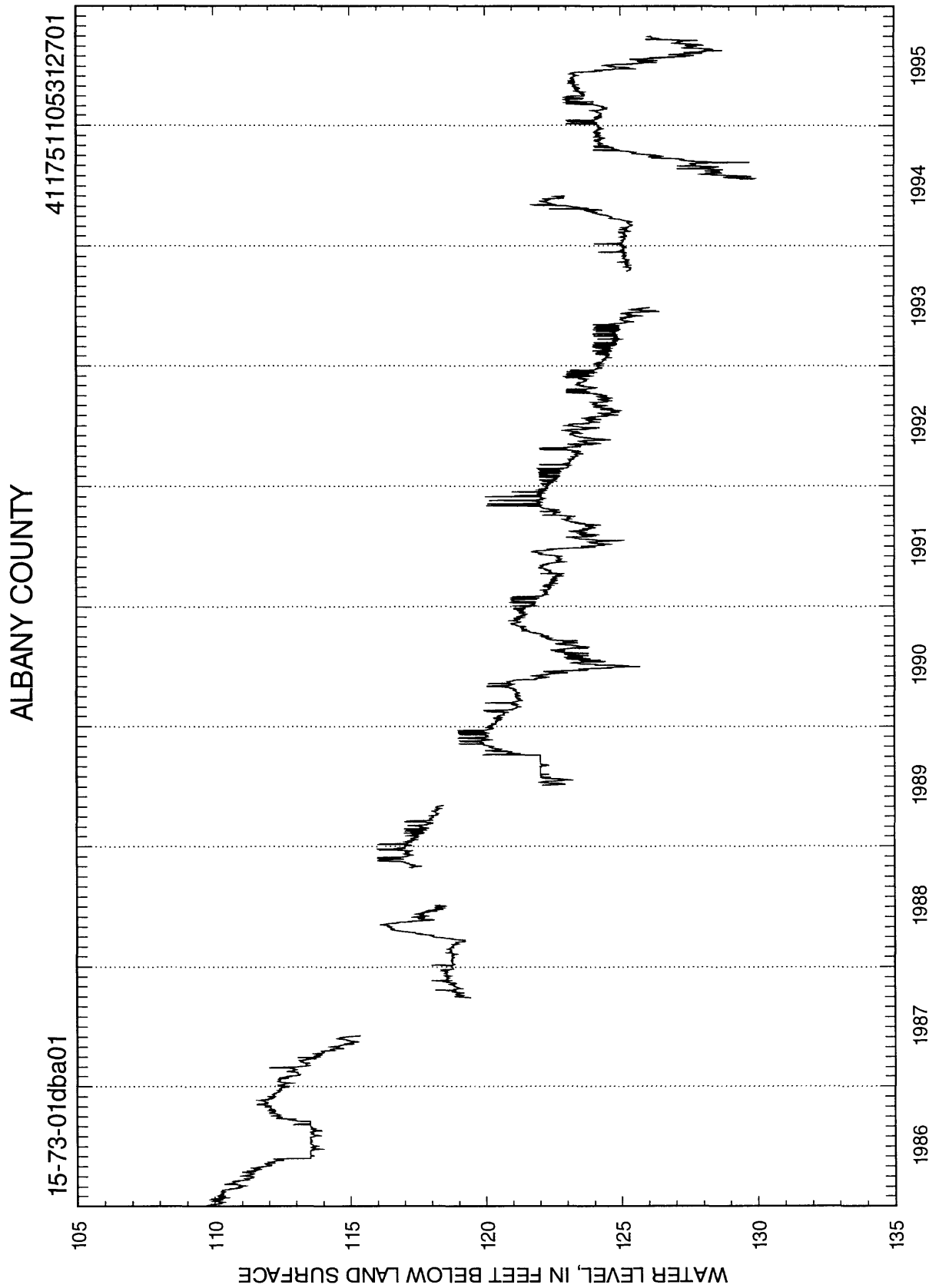


Figure 4. Location of observation wells in Albany County, Wyoming.

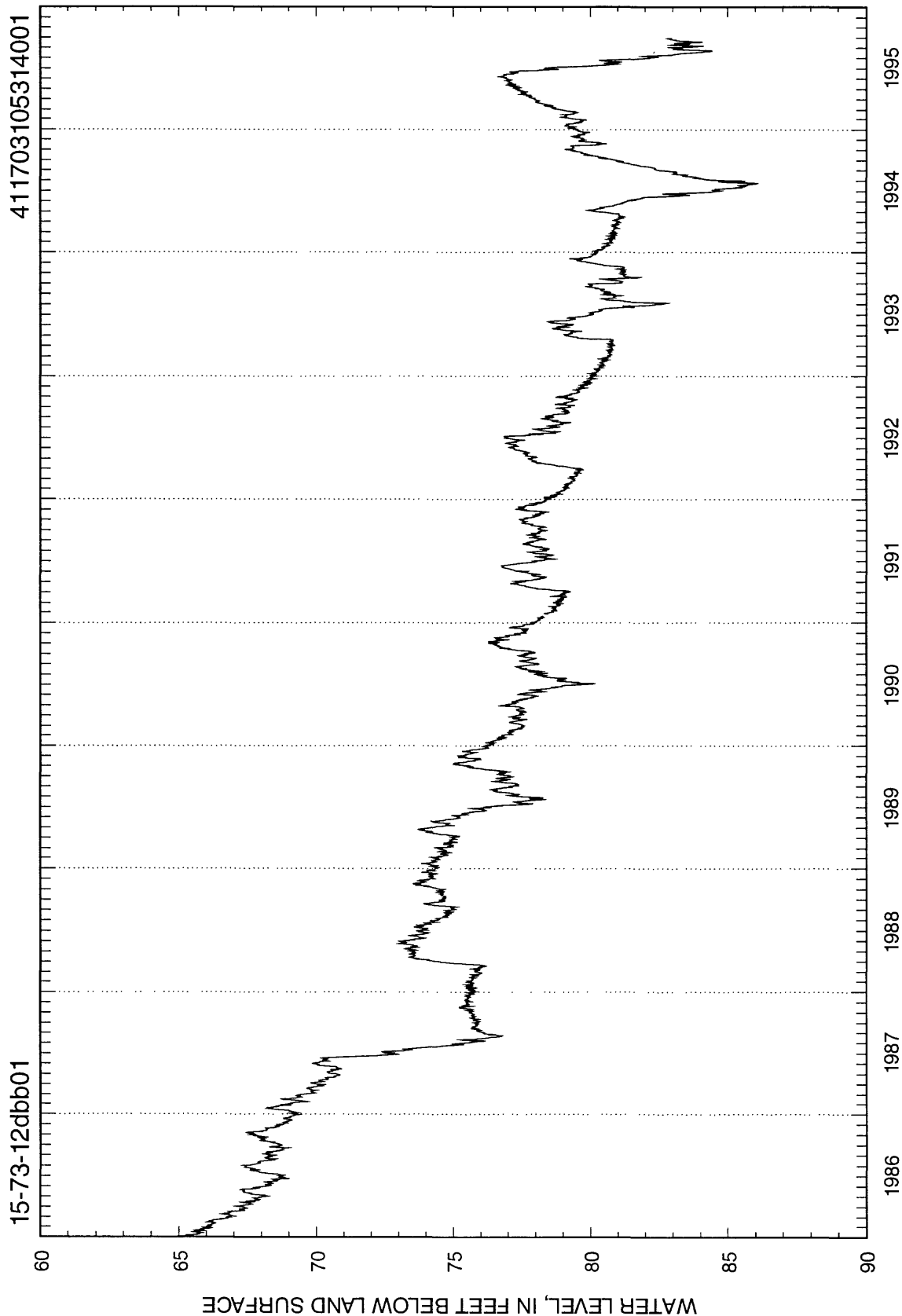
Records of observation wells in Albany County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
15-73-01dba01	182	S	317CSPR	1977-95	104.45	10-84	129.95	07-94
15-73-12dbb01	243	S	317CSPR	1978-95	59.84	09-84	86.08	07-94



Huntoon #1

ALBANY COUNTY



Huntoon #2

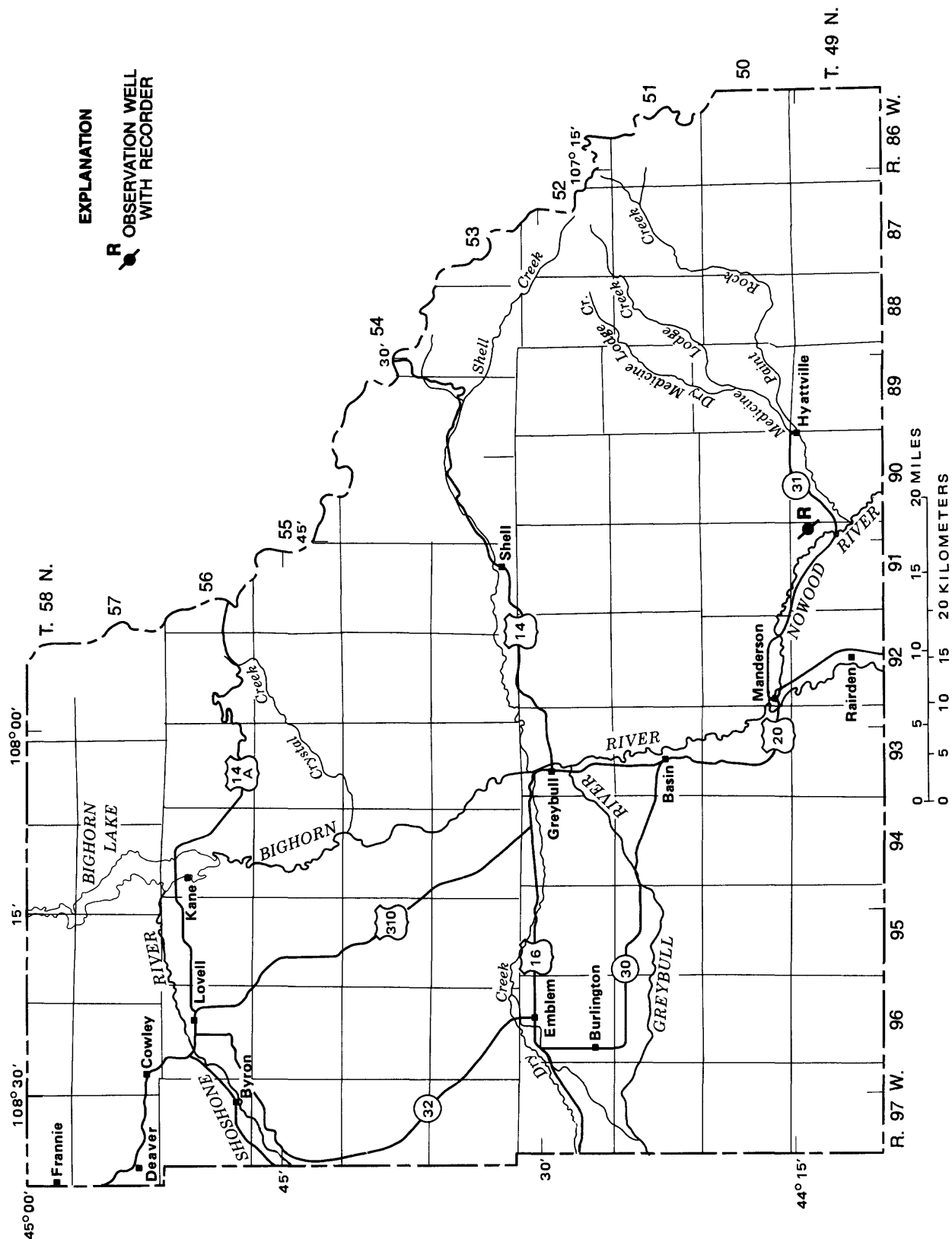
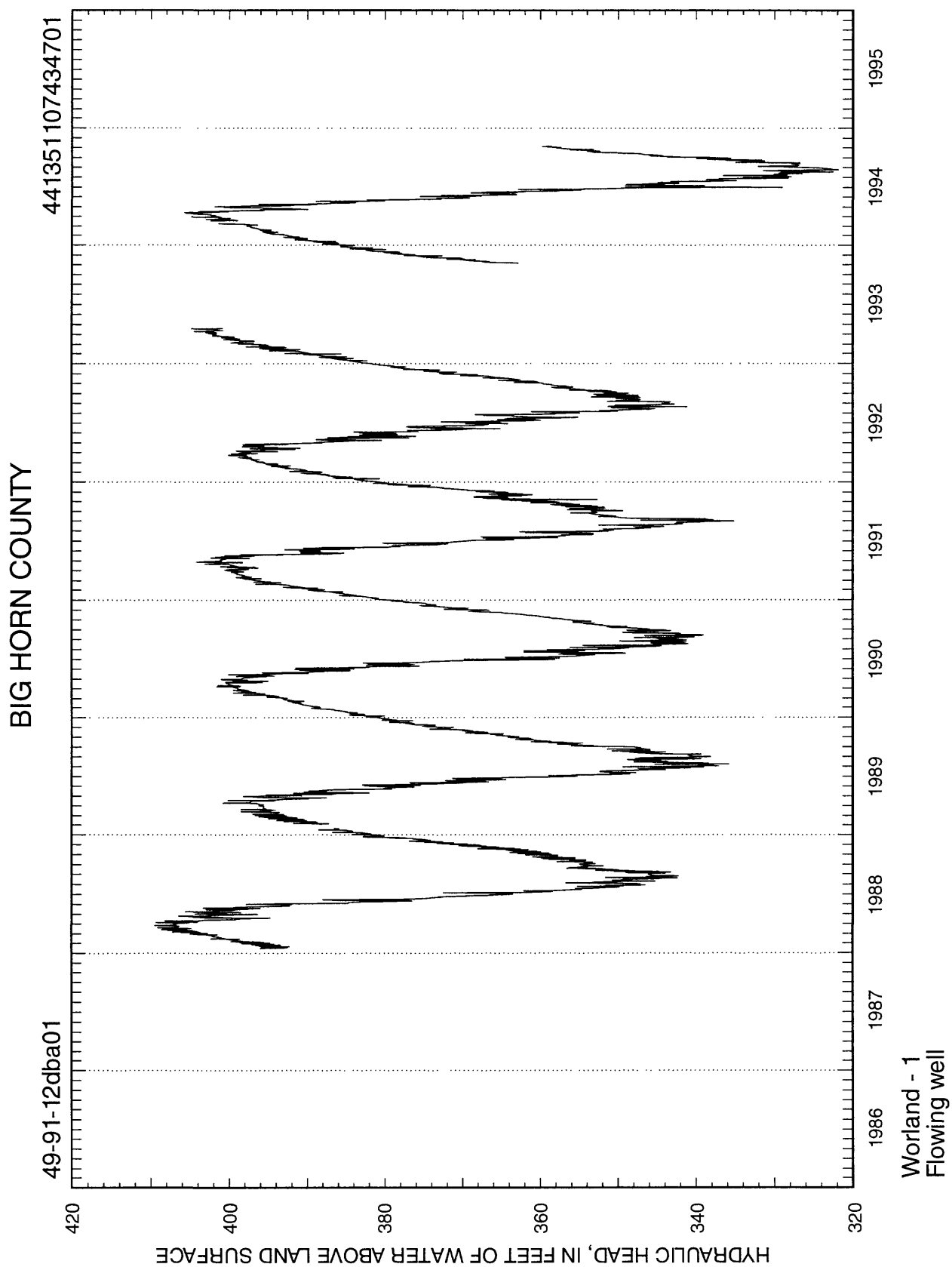


Figure 5. Location of observation wells in Big Horn County, Wyoming.

Record of observation well in Big Horn County, Wyoming, and highest and lowest recorded hydraulic heads, in feet above land surface. Continuous water-level measurements made by the U.S. Geological Survey. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Hydraulic heads			
					Highest		Lowest	
					Head (feet)	Month- year	Head (feet)	Month- year
49-91-12dba01	4,210	P	331MDSN	1988-94	¹ 409.50	03-88	¹ 321.87	08-94

¹Flowing well, shut-in pressure was measured by pressure transducer and converted to hydraulic head above land surface for illustration purposes.
Hydraulic head, in feet above land surface, was calculated by multiplying the shut-in pressure in pounds per square inch times 2.31.



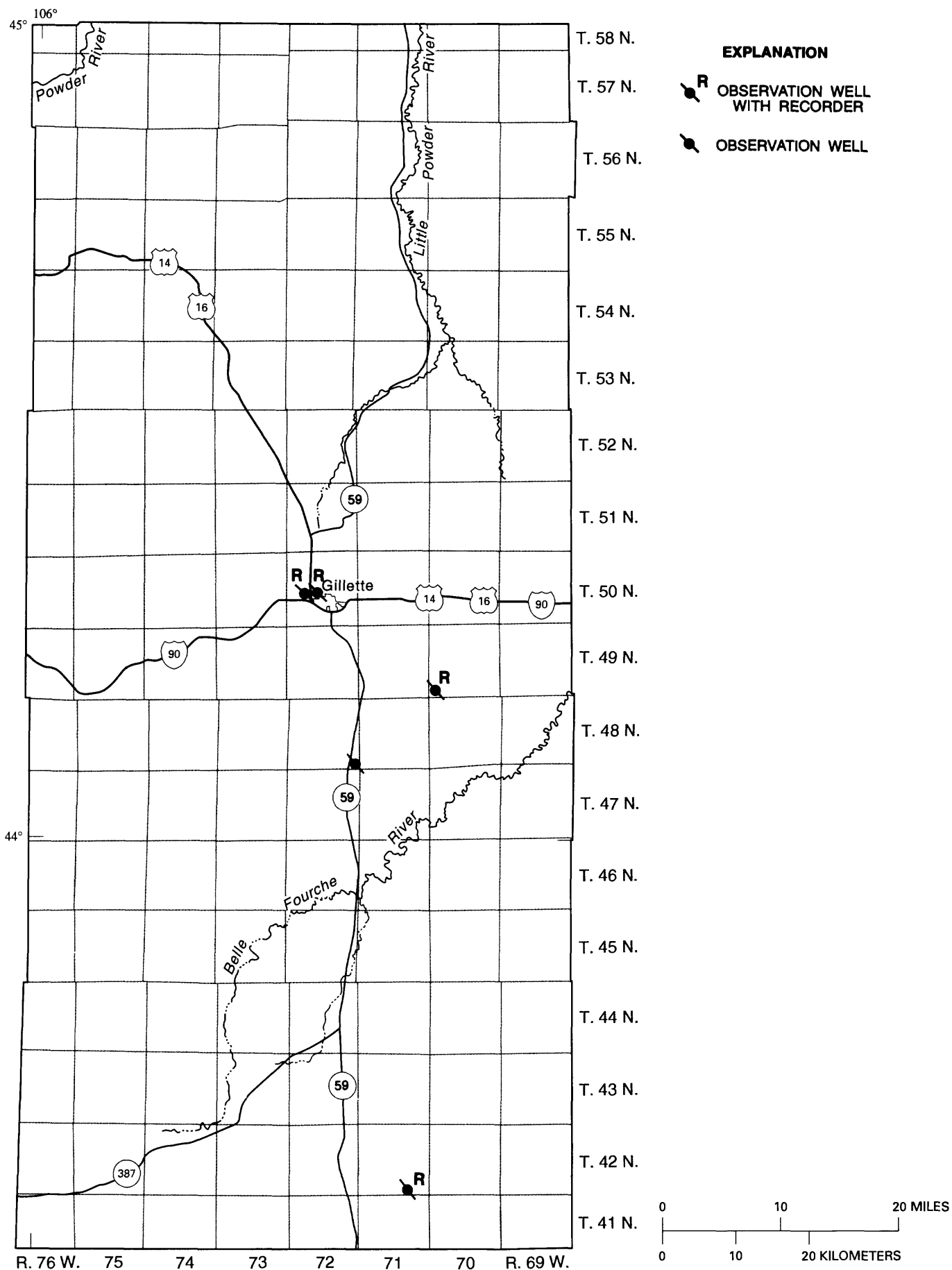


Figure 6. Location of observation wells in Campbell County, Wyoming.

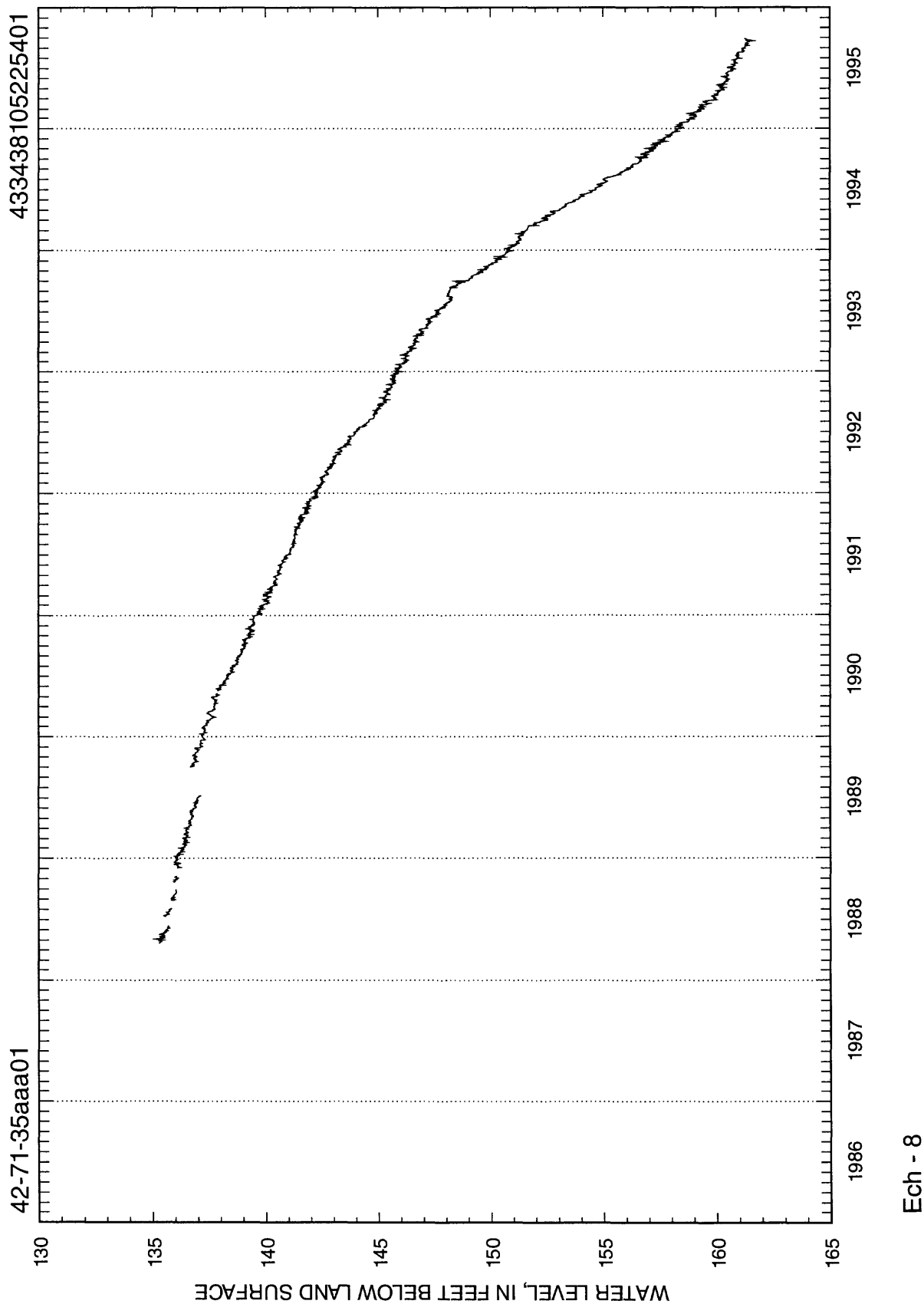
Records of observation wells in Campbell County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous and individual water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

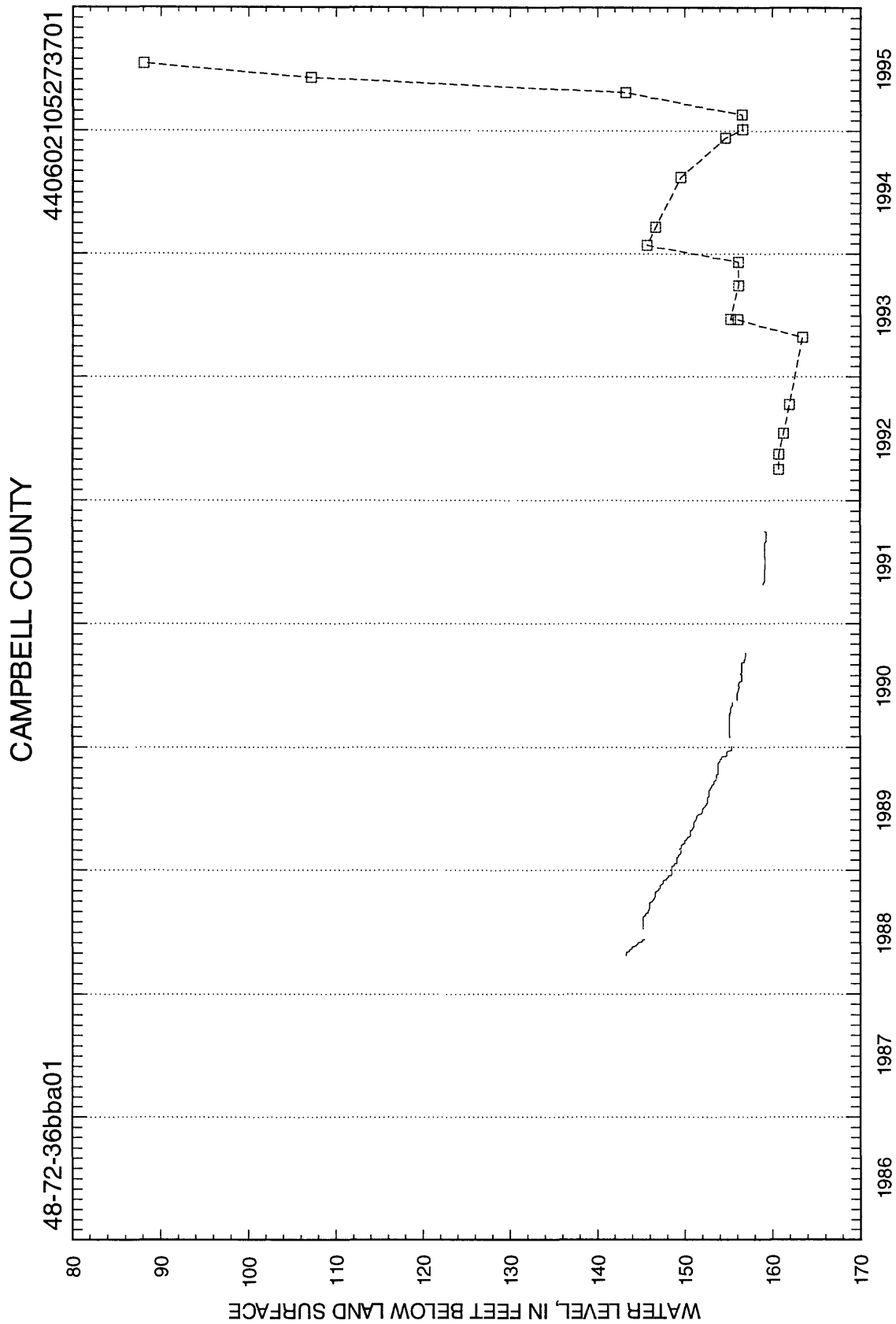
Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
42-71-35aaa01	399	U	124WSTC	1988-95	135.13	05-88	161.60	09-95
48-72-36bba01	380	U	124WSTC	1988-95	¹ 88.10	07-95	² 163.45	04-93
49-70-31bbb01	3,754	U	211FXHL	1983-95	491.98	09-83	527.44	09-95
50-72-20cab01	1,255	U	125LEBO	1985-95	712.08	02-90	803.12	09-91
50-72-21aba01	320	P	124WSTC	1983-95	59.56	09-95	95.71	06-83

¹Measurements after April 1993 were affected by bubbling gas in the well.

²From hand-measured data.

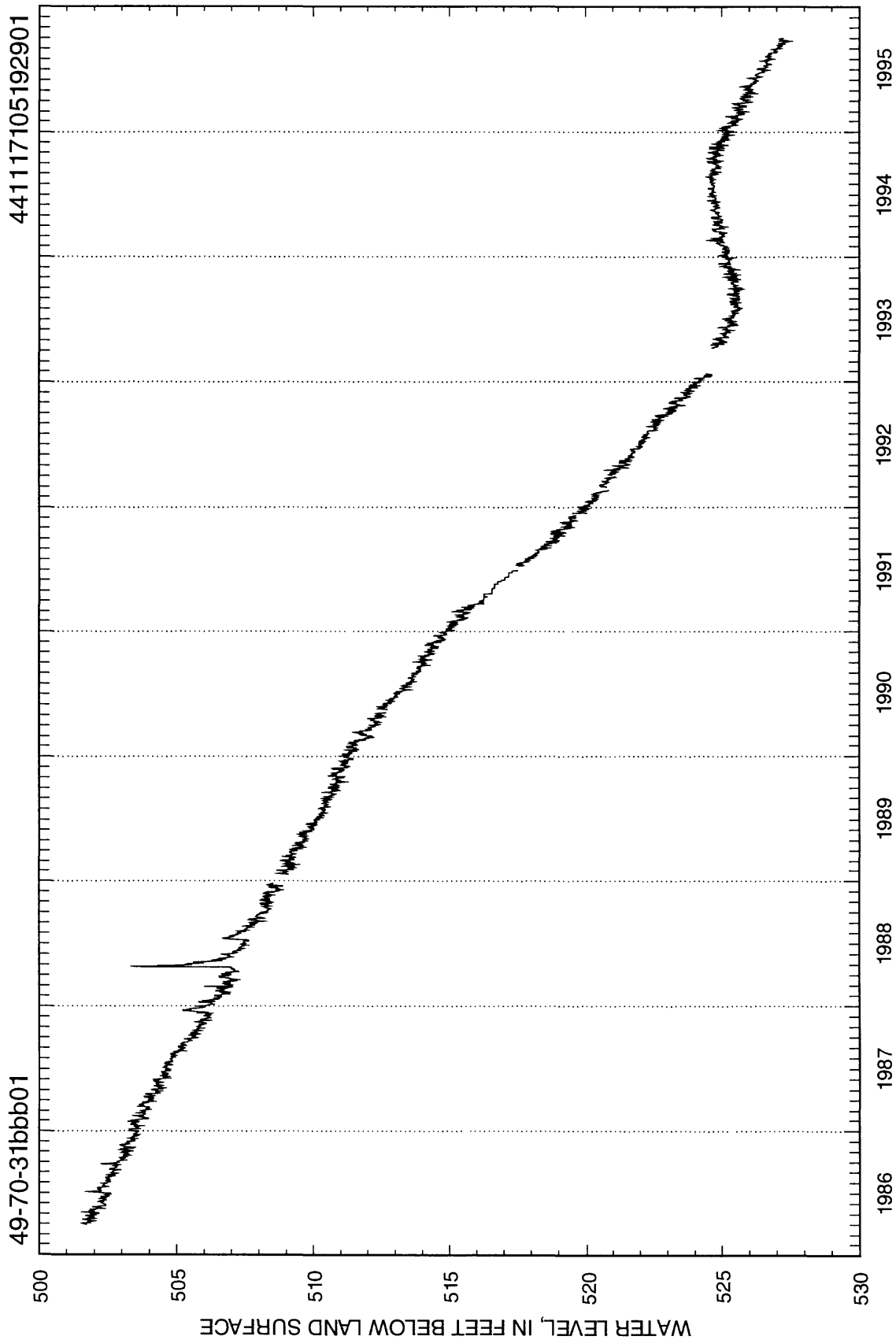
CAMPBELL COUNTY



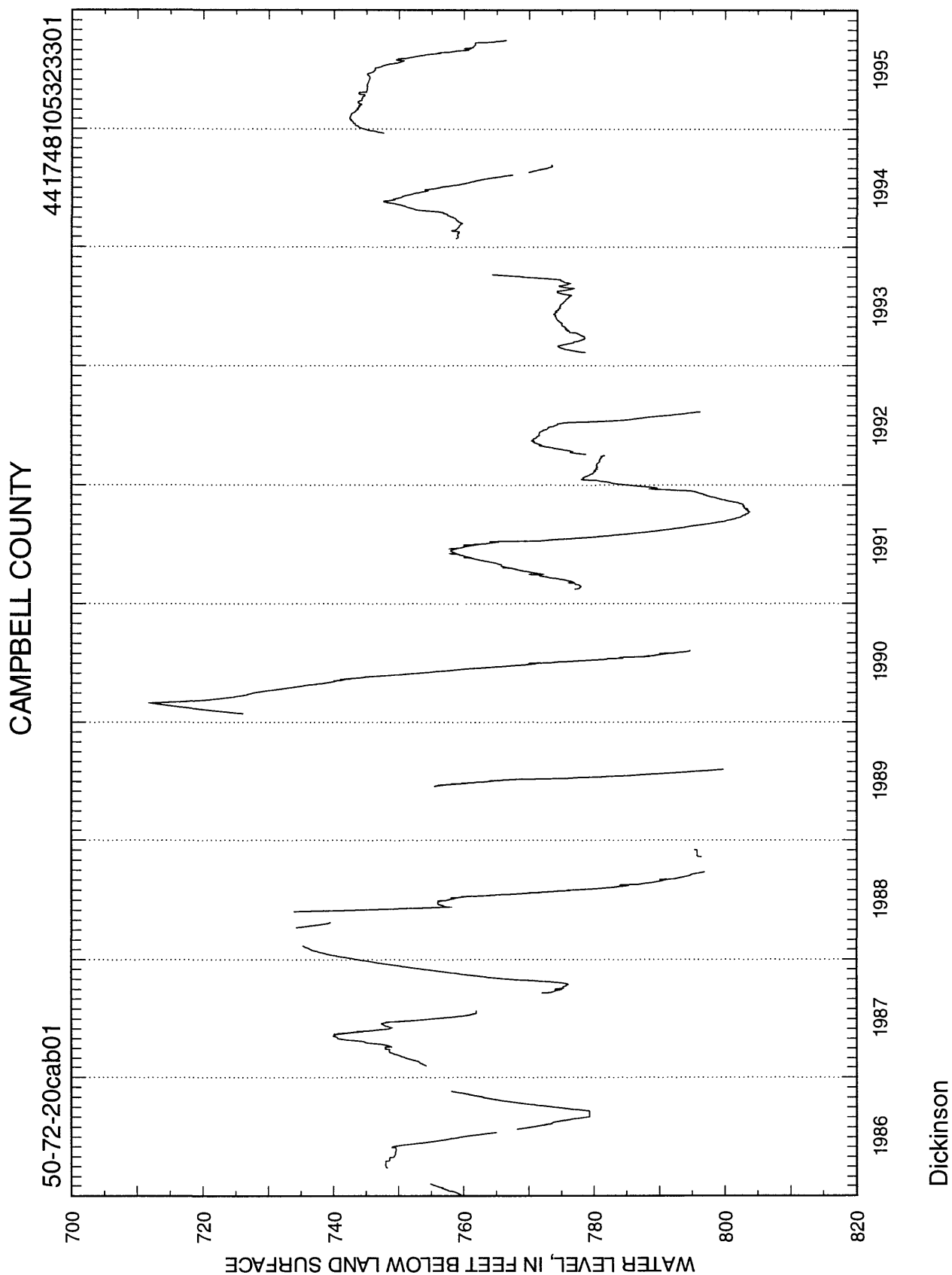


Ech - 1
Measurements after April 1993 were affected by bubbling gas in the well.

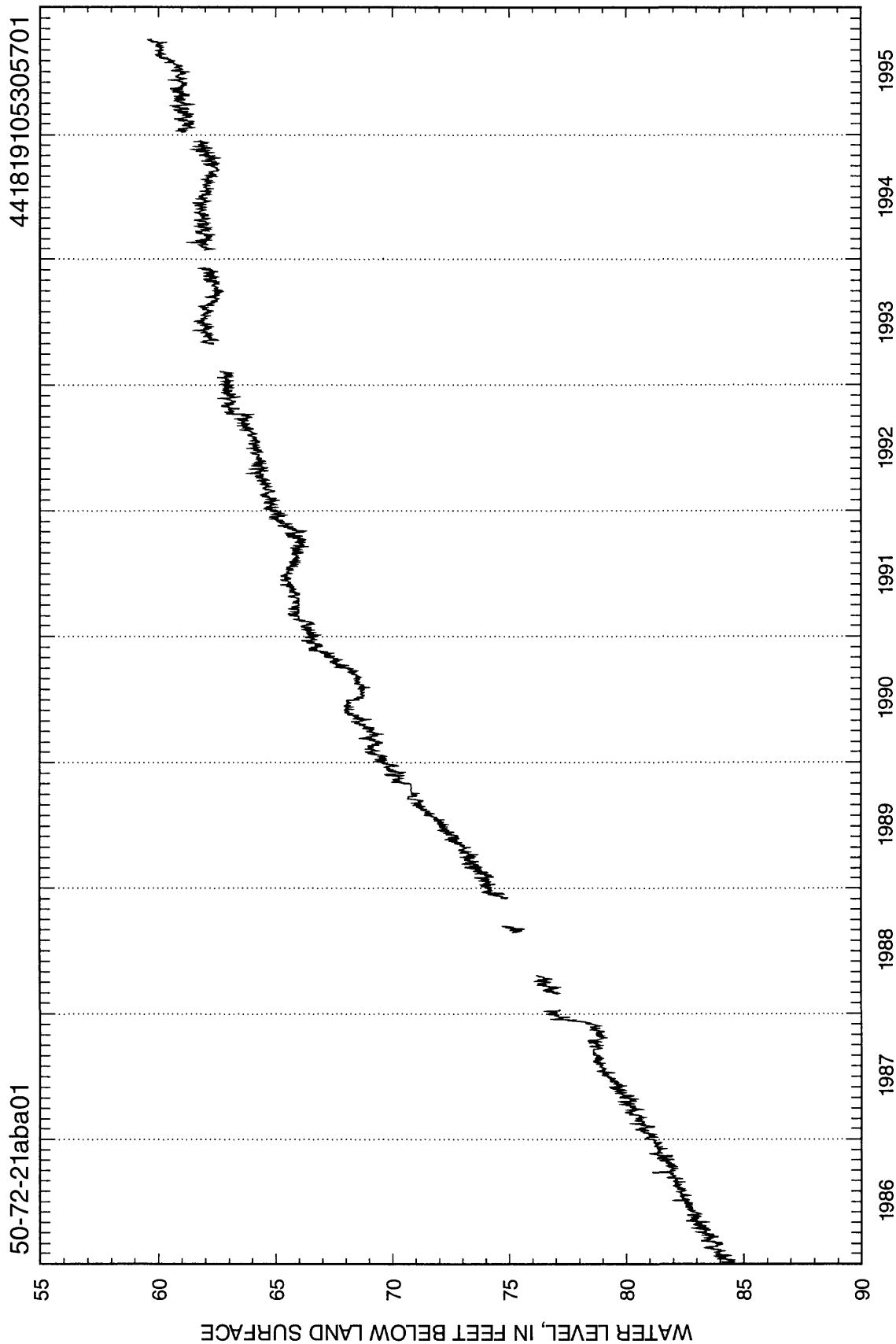
CAMPBELL COUNTY



Hampshire - 1



CAMPBELL COUNTY



Gillette H - 13

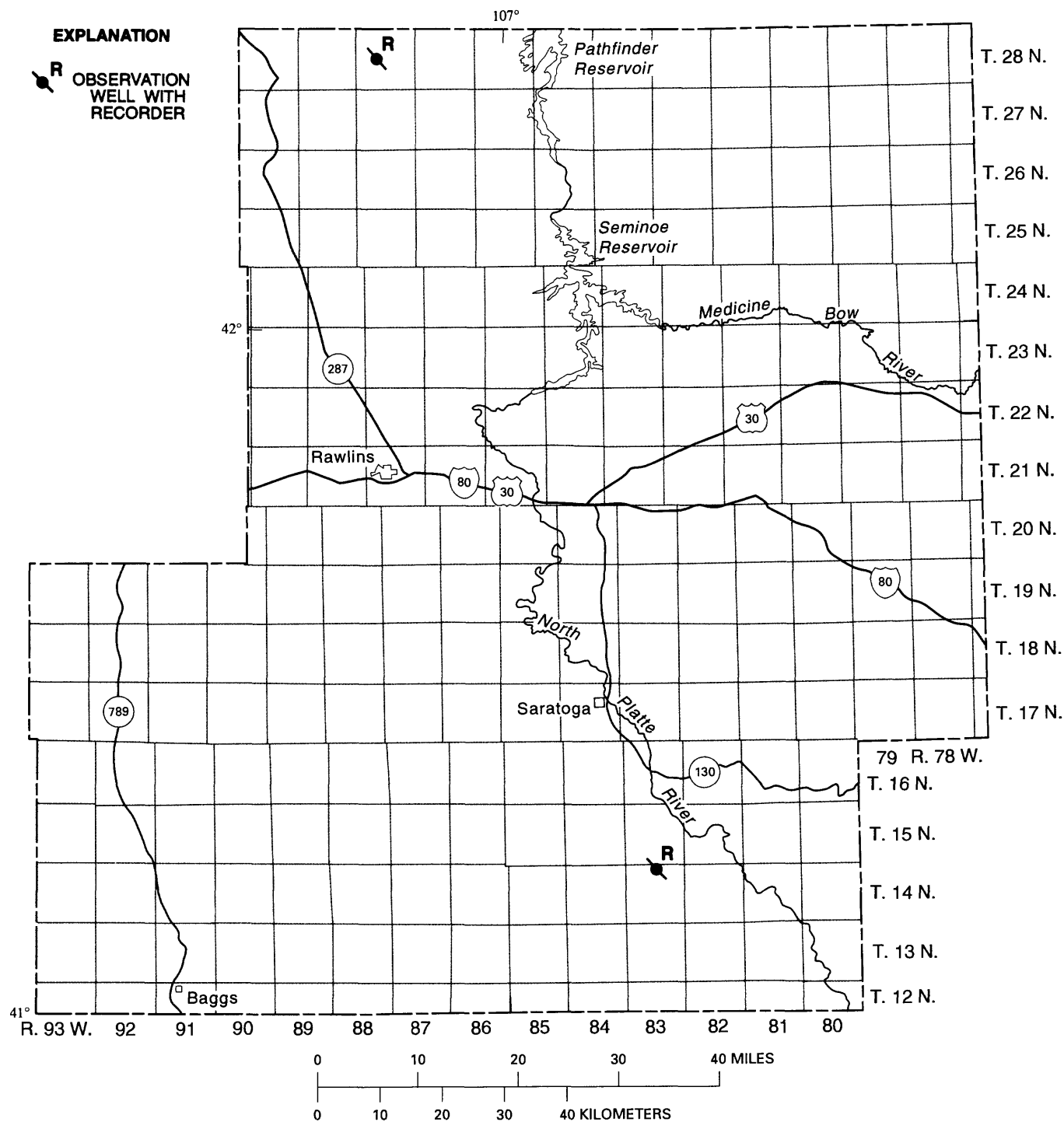


Figure 7. Location of observation wells in Carbon County, Wyoming.

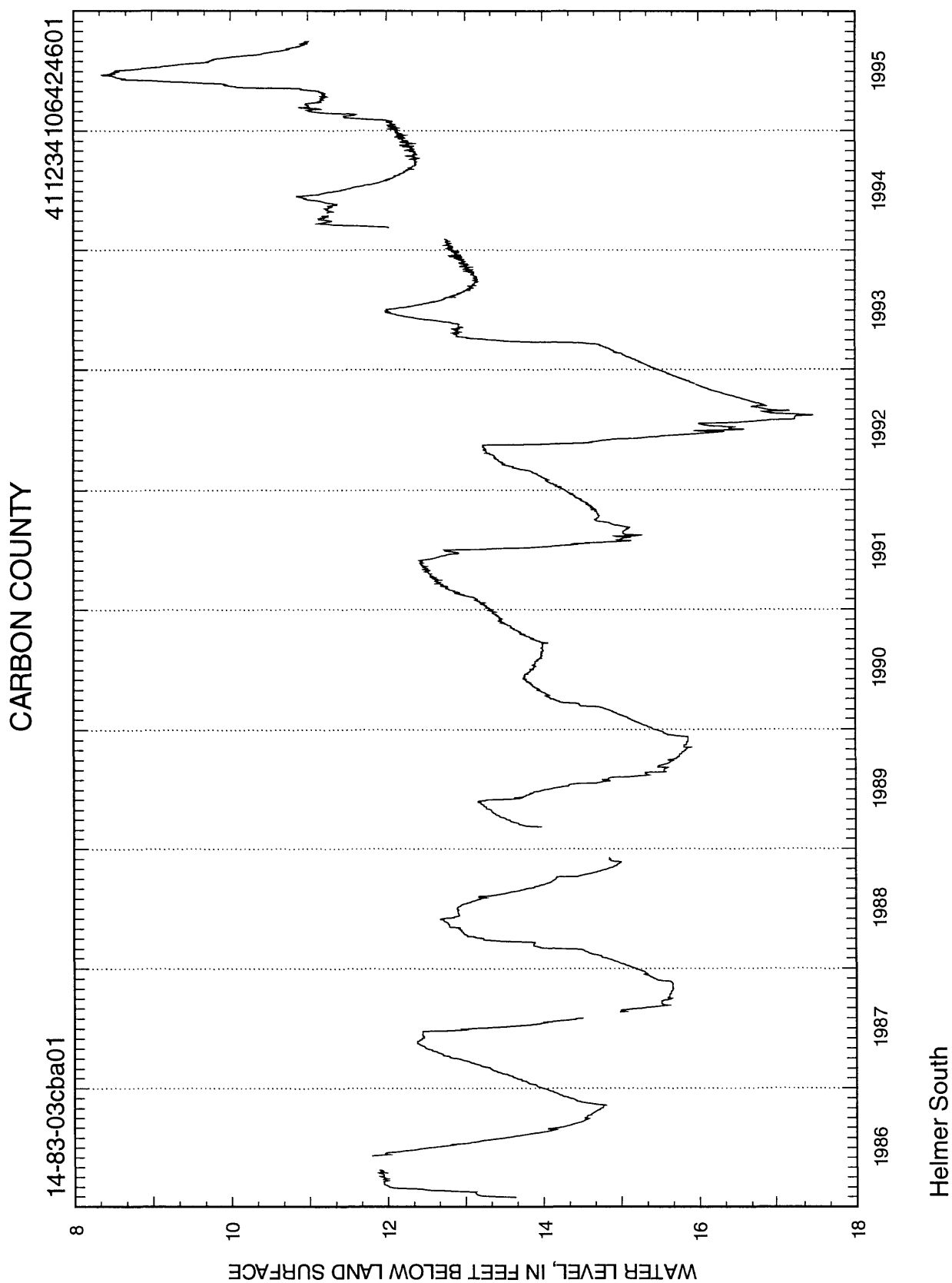
Records of observation wells in Carbon County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous water-level measurements provided by the Wyoming State Engineer's Office and the U.S. Geological Survey. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
¹ 14-83-03cba01	58	I	121NRPK	1980-95	8.37	06-95	17.47	08-92
² 28-87-16cca01	812	U	122ARKR	1981-95	162.80	05-84	³ 182.66	10-81

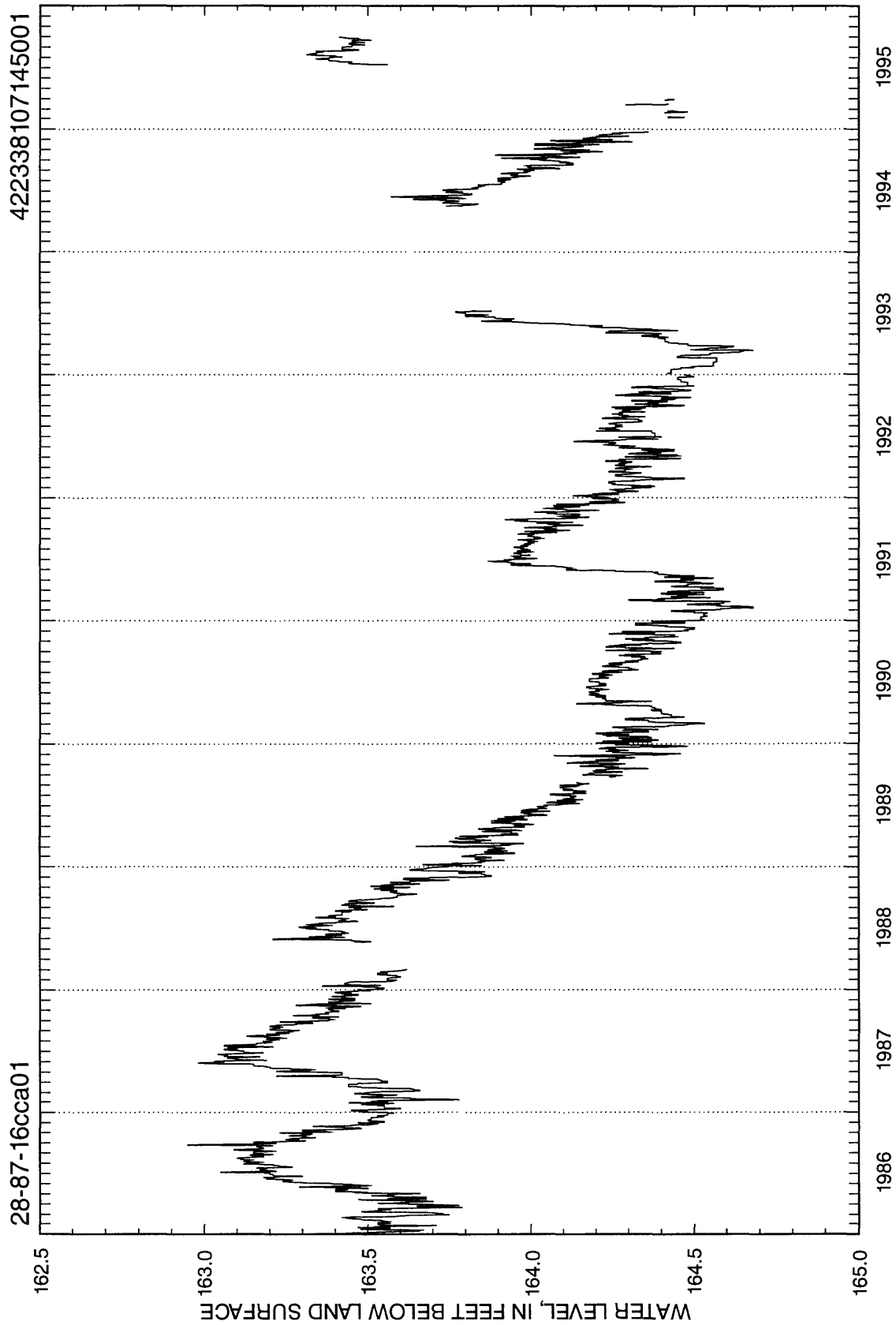
¹Measured by Wyoming State Engineer's Office.

²Measured by U.S. Geological Survey.

³Nearby well being pumped.



CARBON COUNTY



Split Rock #2

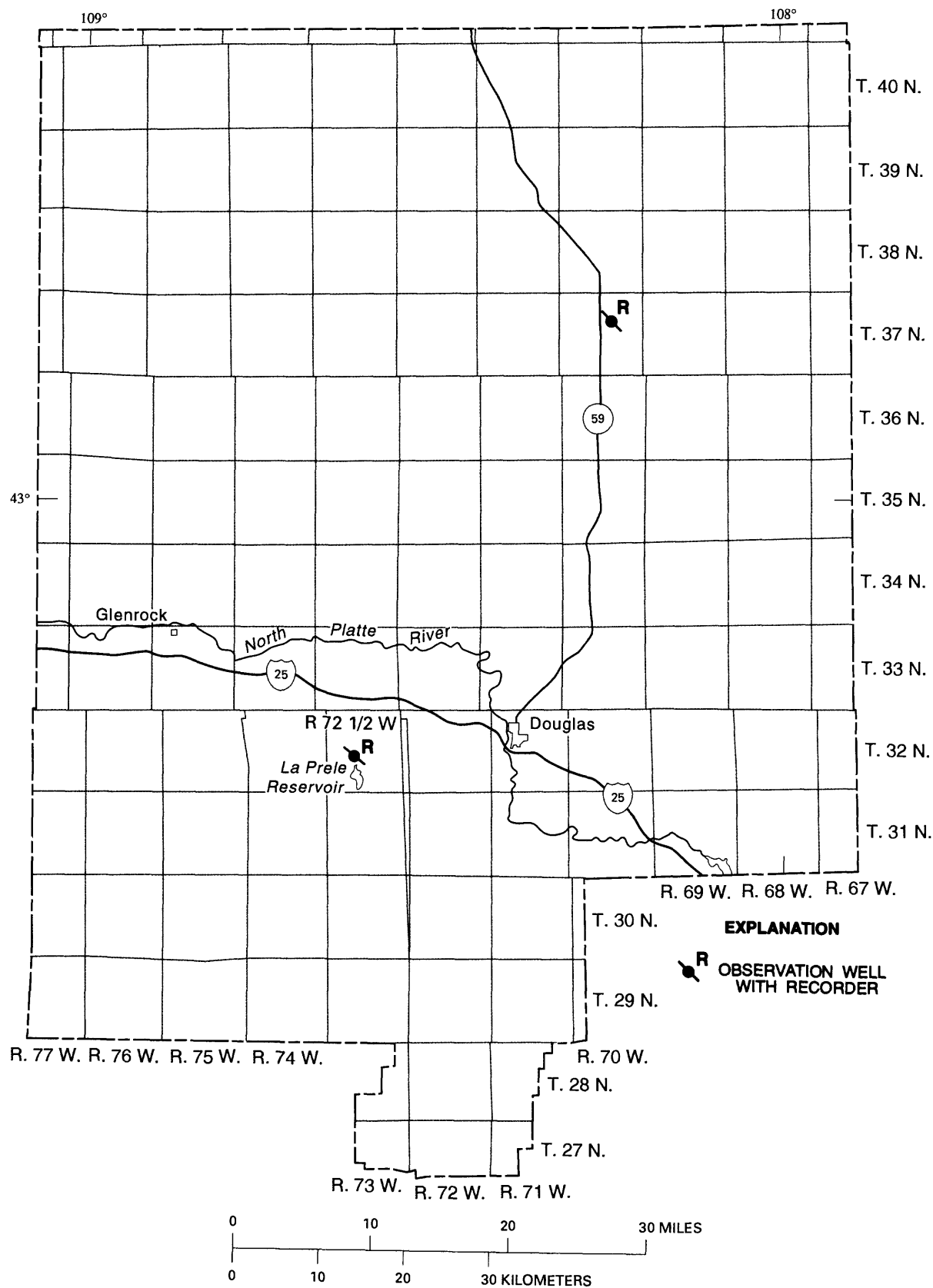
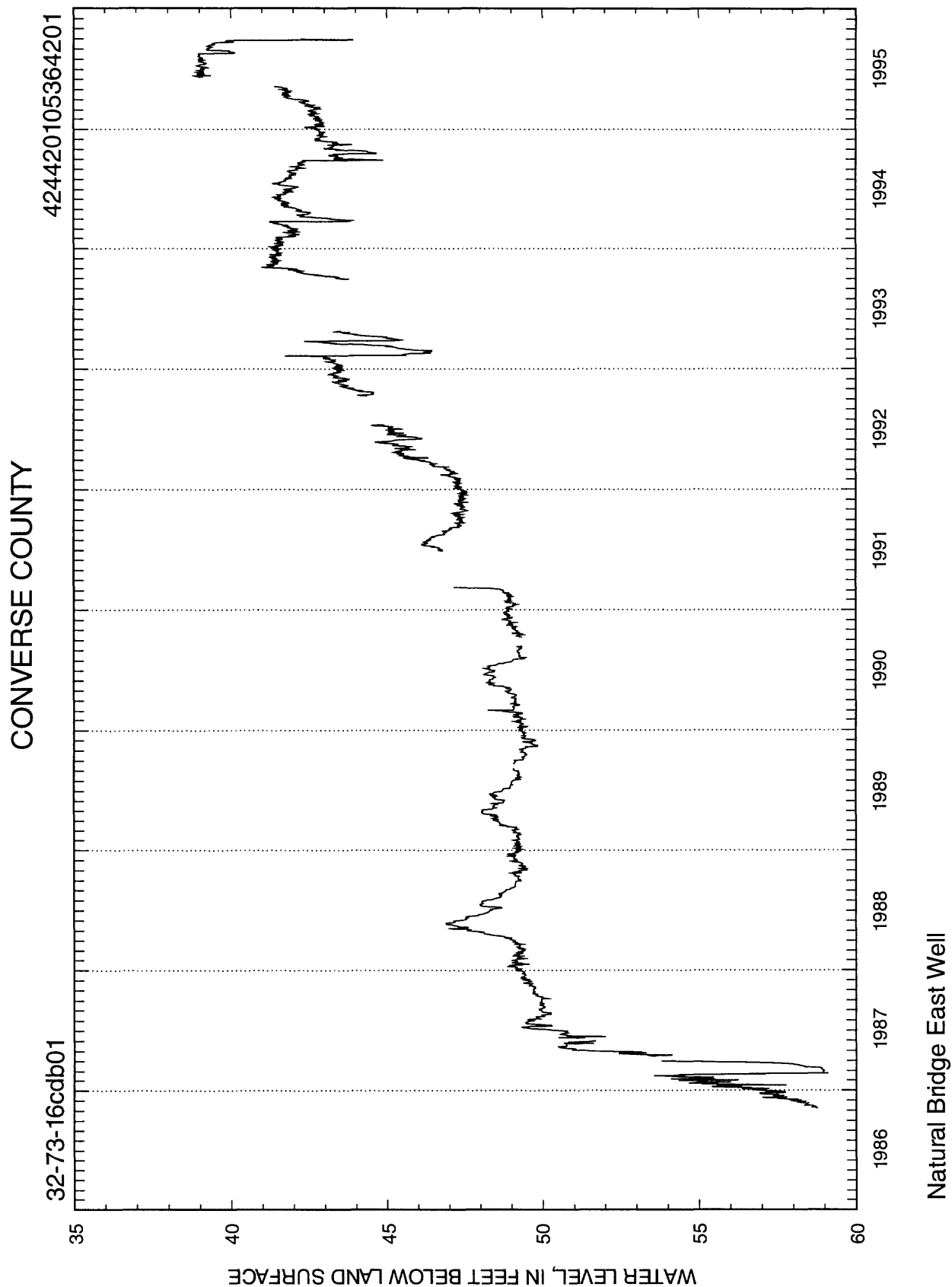


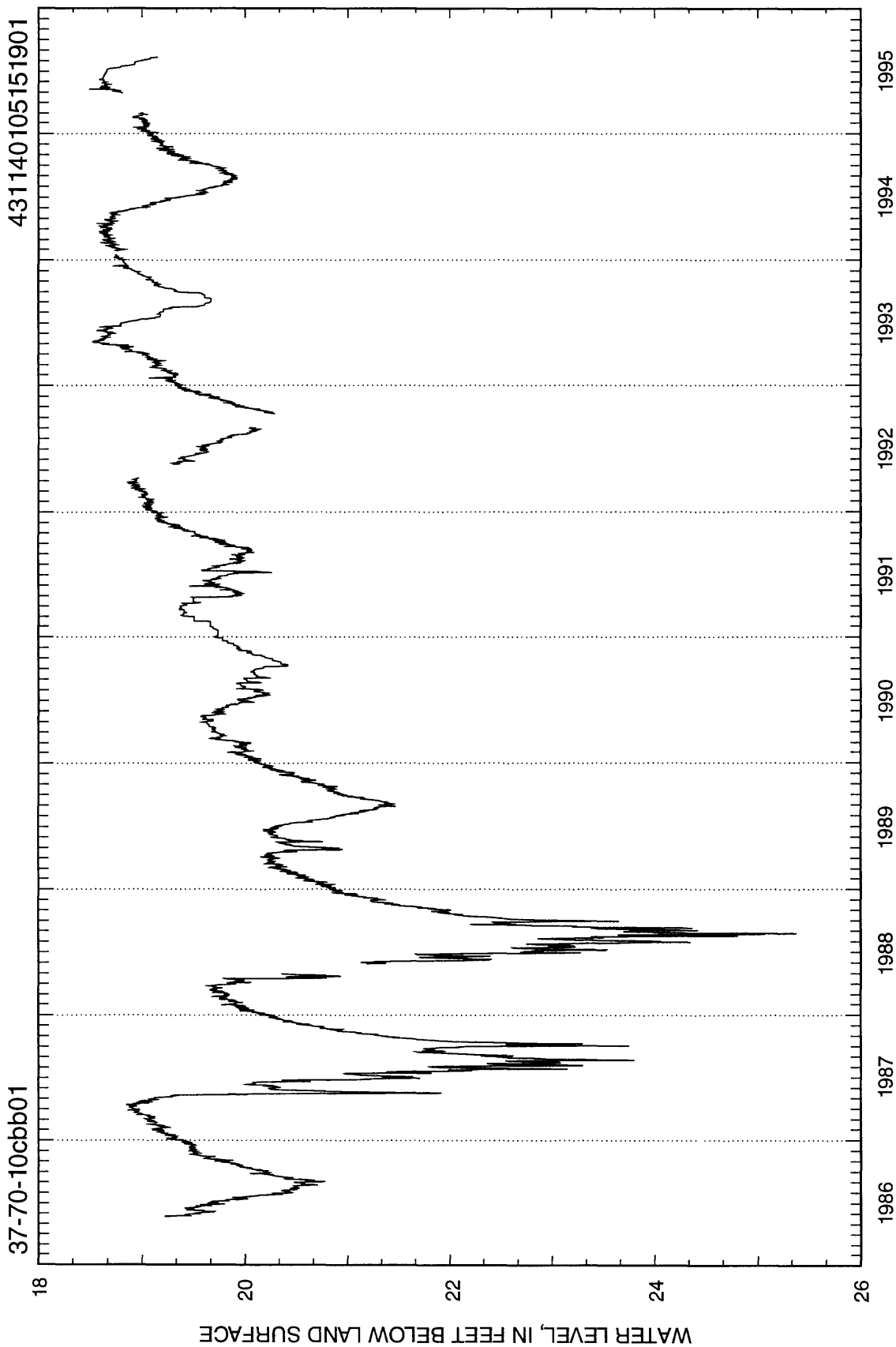
Figure 8. Location of observation wells in Converse County, Wyoming.

Records of observation wells in Converse County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

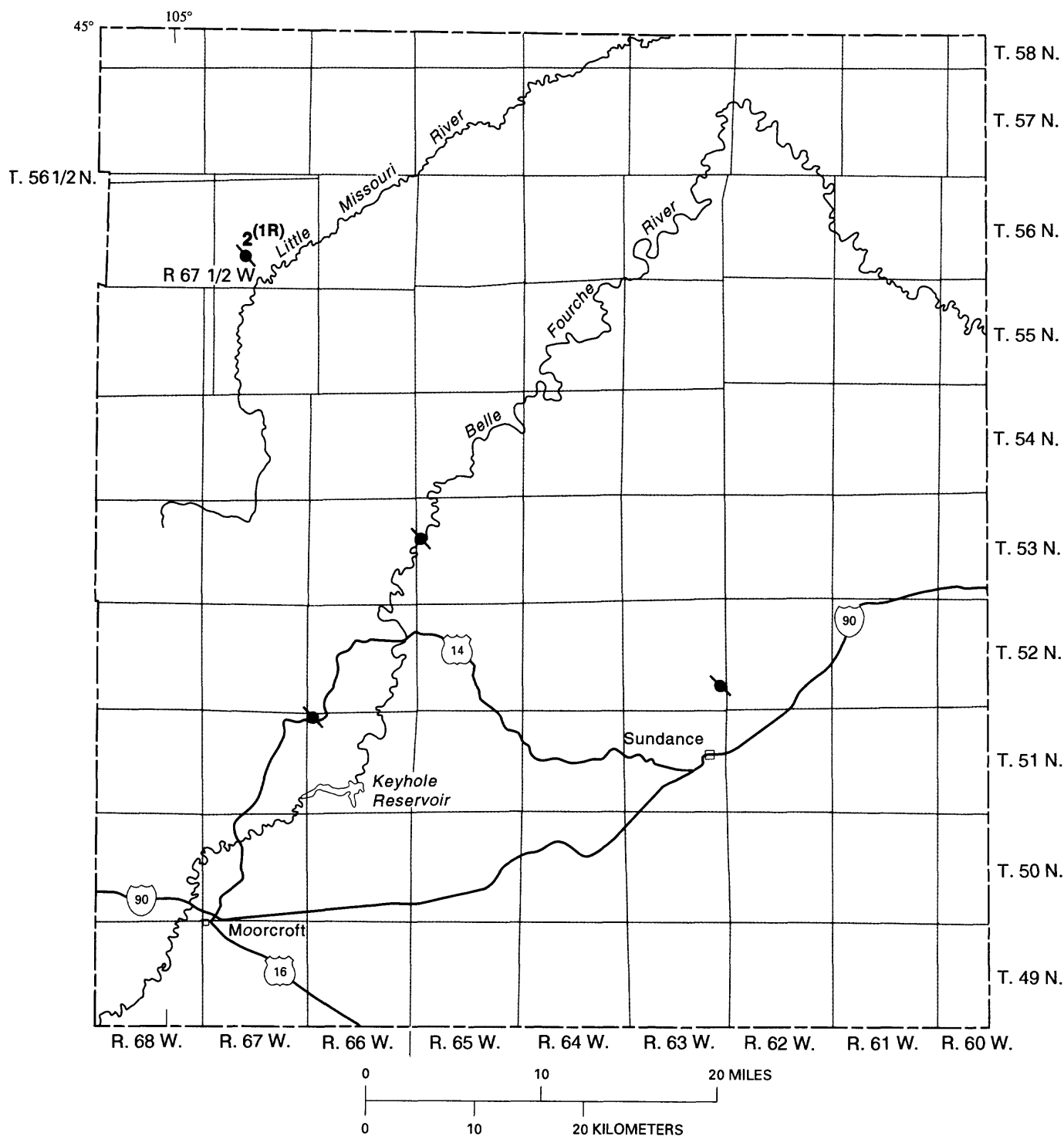
Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
32-73-16cdb01	220	U	317CSPR	1986-95	38.84	06-95	59.12	02-87
37-70-10cbb01	268	U	124WSTC	1986-95	18.49	05-95	25.38	08-88



CONVERSE COUNTY



Bill #6



EXPLANATION

●² OBSERVATION WELL--
Number near well
is number of wells
at that location

●^R OBSERVATION
WELL WITH
RECORDER

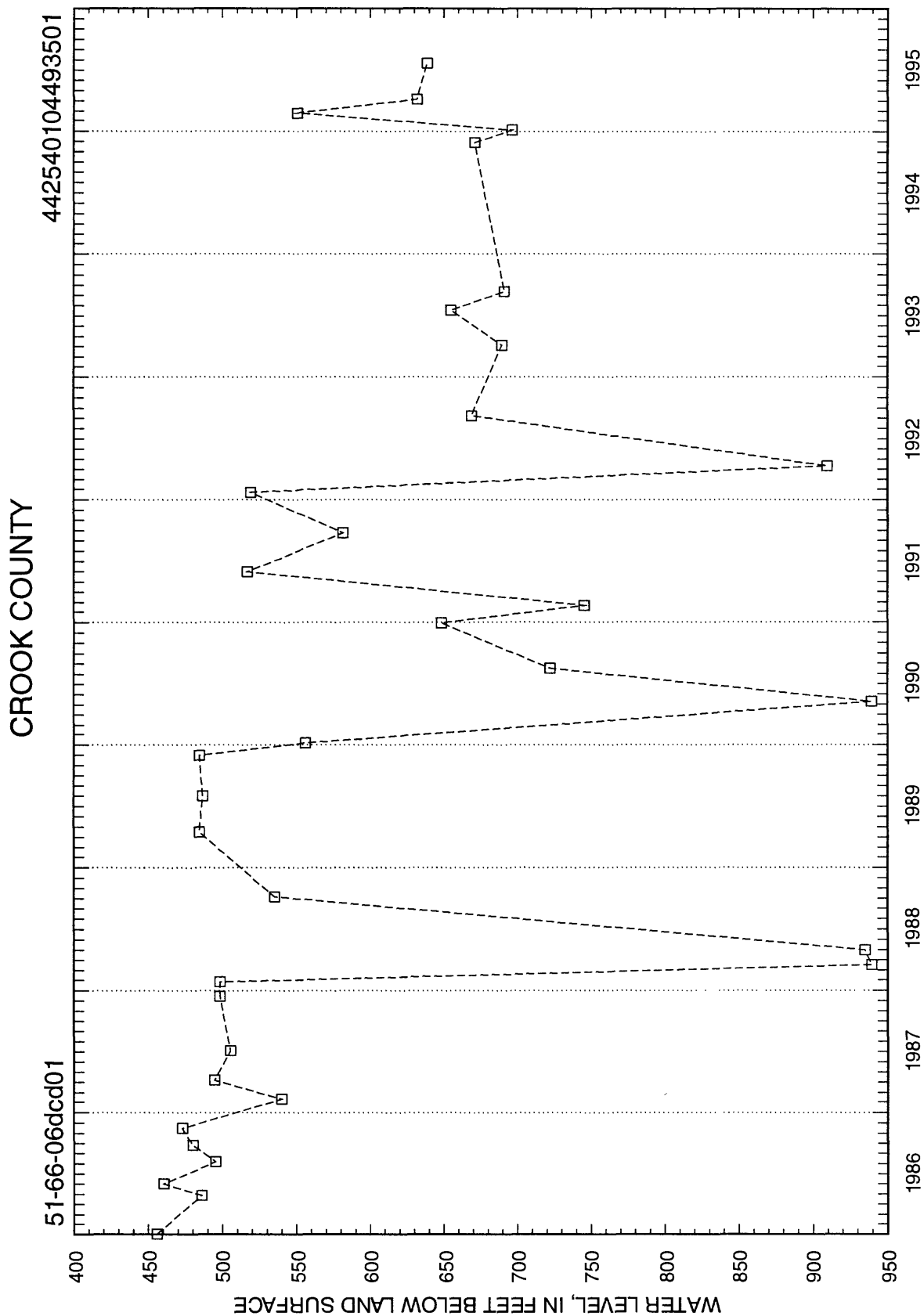
Figure 9. Location of observation wells in Crook County, Wyoming.

Records of observation wells in Crook County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous and individual water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

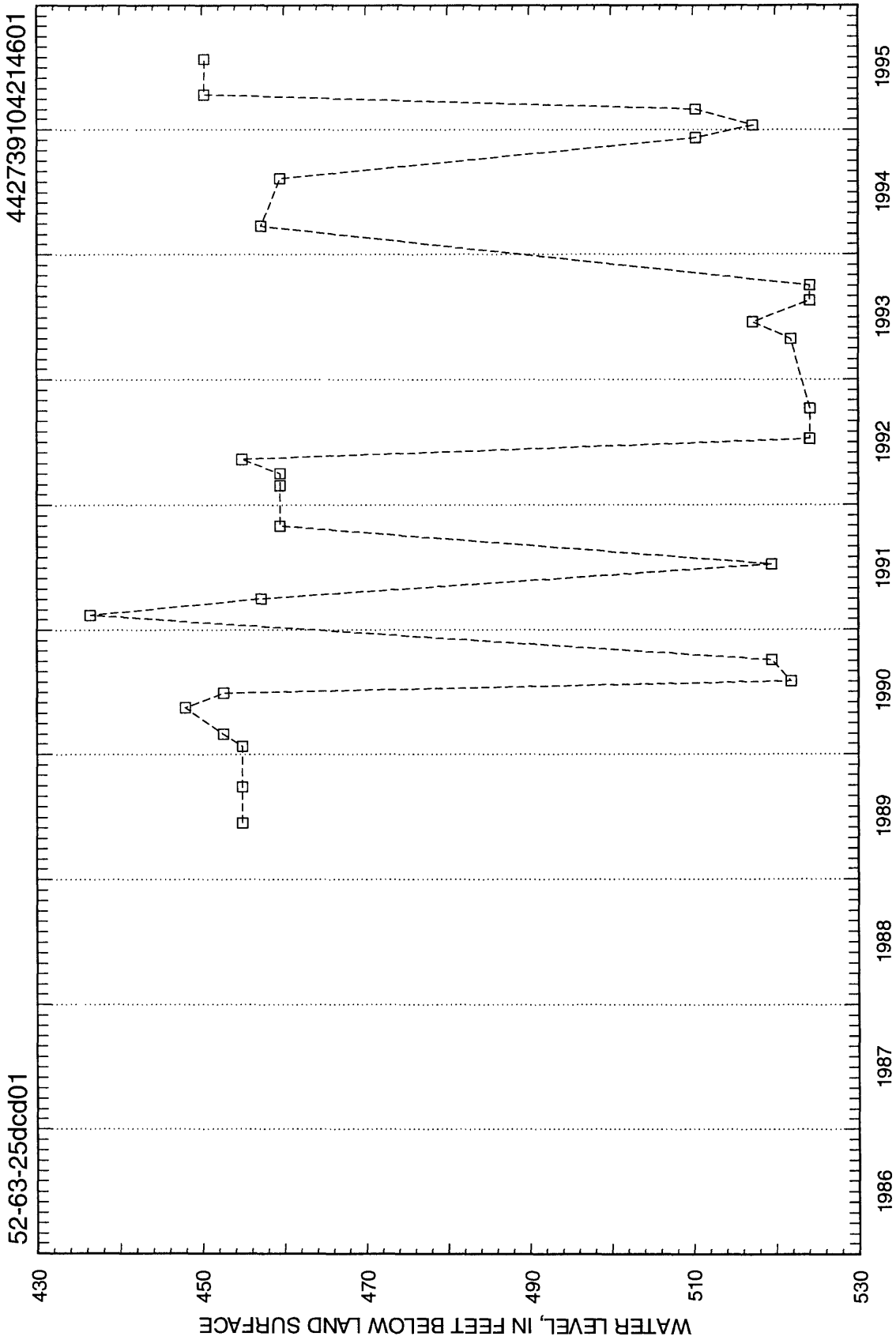
Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
51-66-06dcd01	3,001	P	331MDSN	1981-95	388.66	05-83	¹ 939.60	05-88 06-90
52-63-25dcd01	1,123	P	331MDSN	1982-84 1989-95	¹ 436.41	02-91	¹ 524.19	07-92 10-92 08-93 10-93
53-65-18bbd02	1,341	P	337PHSP	1962-95	¹ 3.90	09-76	^{1,2} 97.24	12-93
56-67-28aab01	3,320	U	331MDSN	1982-95	151.65	11-84	¹ 169.17	07-95
56-67-28aab02	2,240	U	331MDSN	1983-95	128.18	05-87	149.25	09-93

¹From hand-measured data.

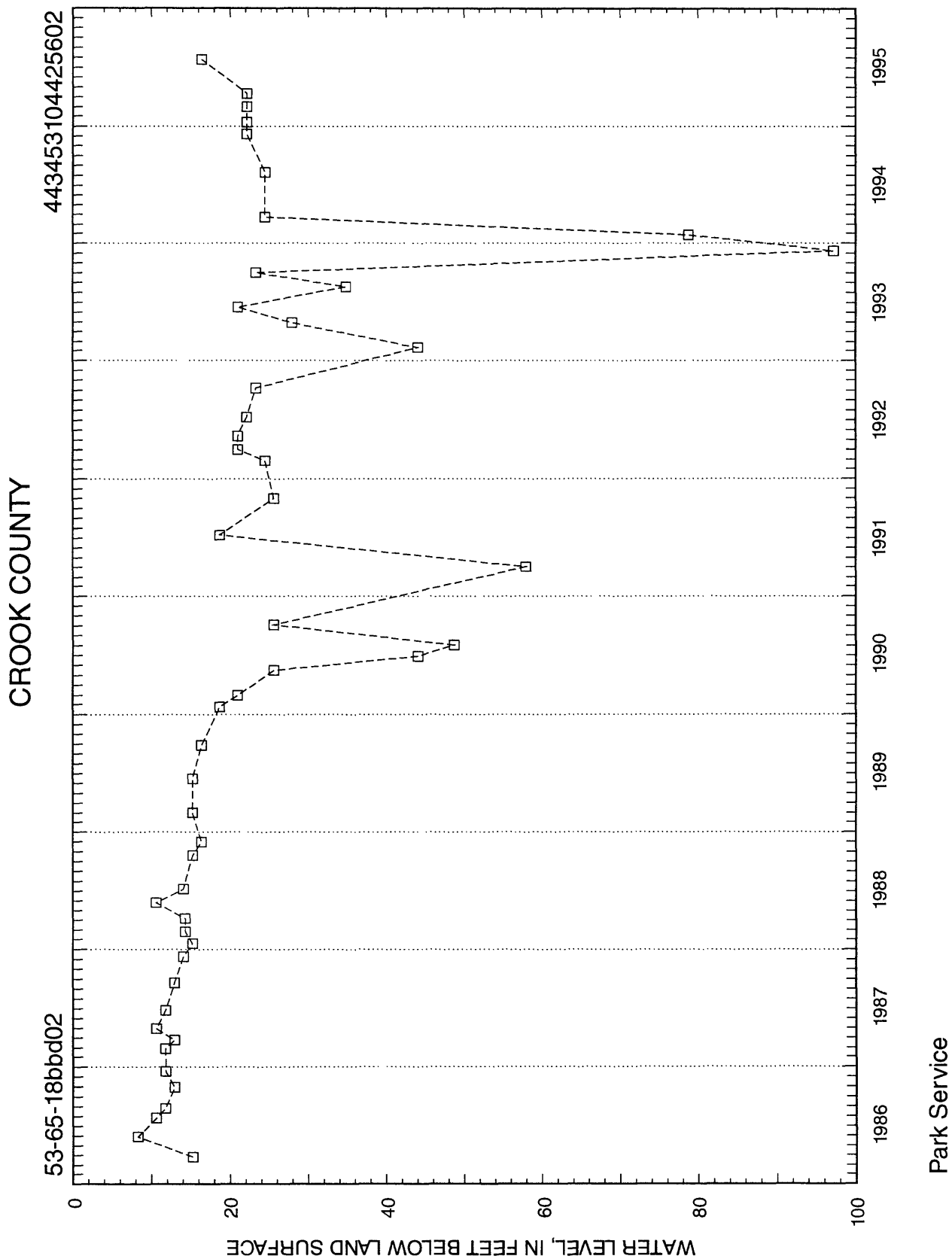
²Well being pumped.



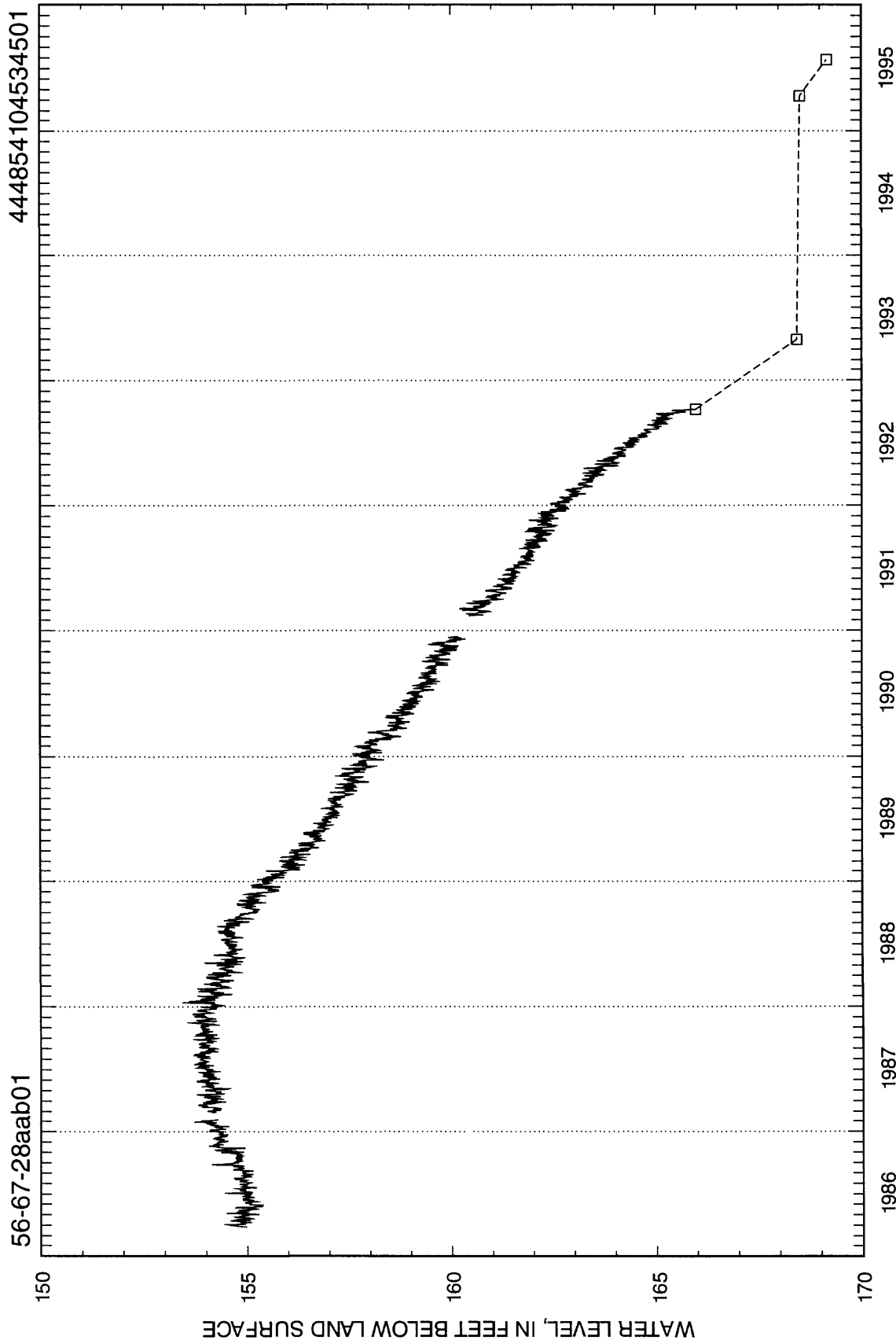
CROOK COUNTY



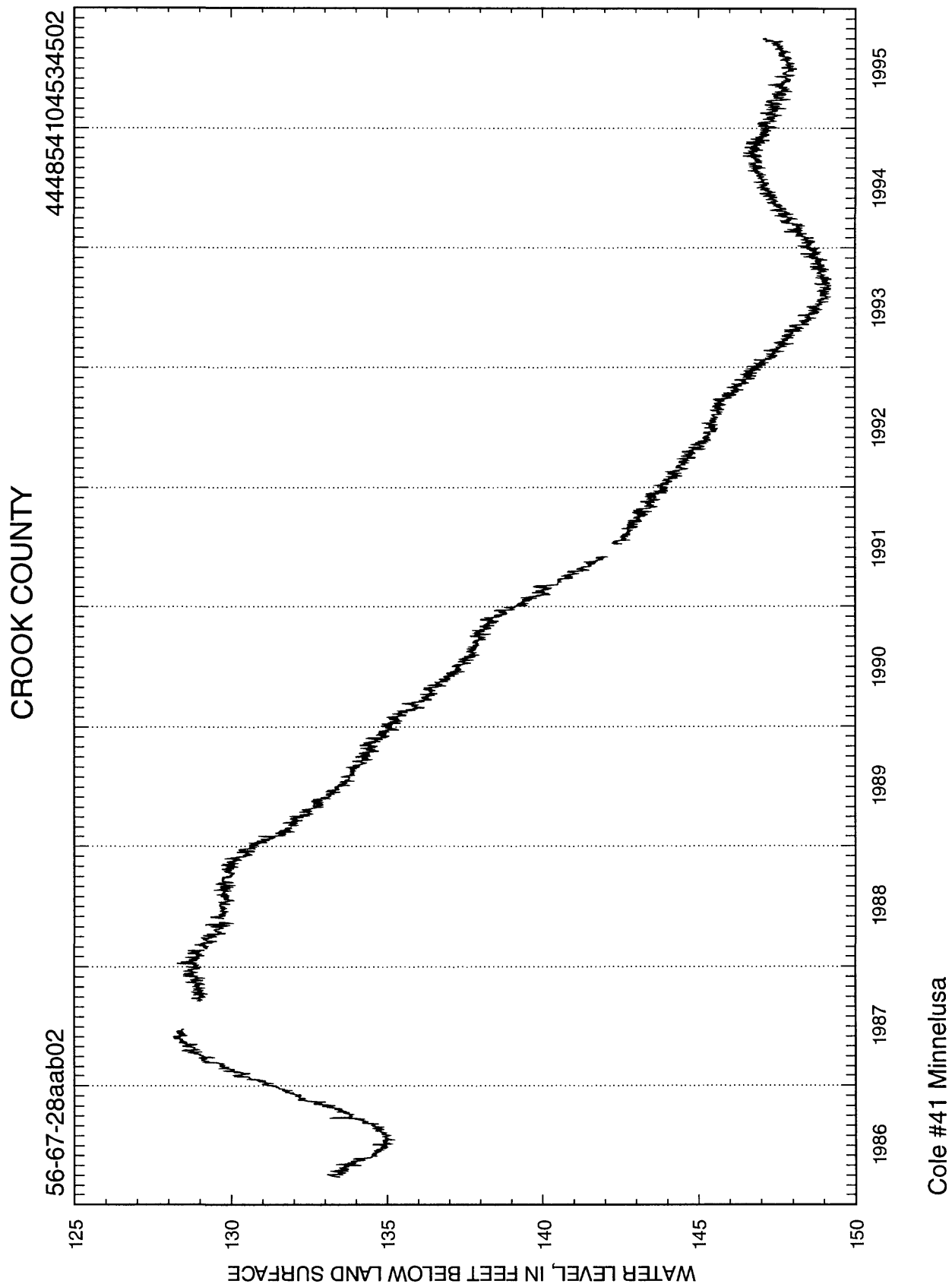
Cole #3A



CROOK COUNTY



Cole #41 Madison



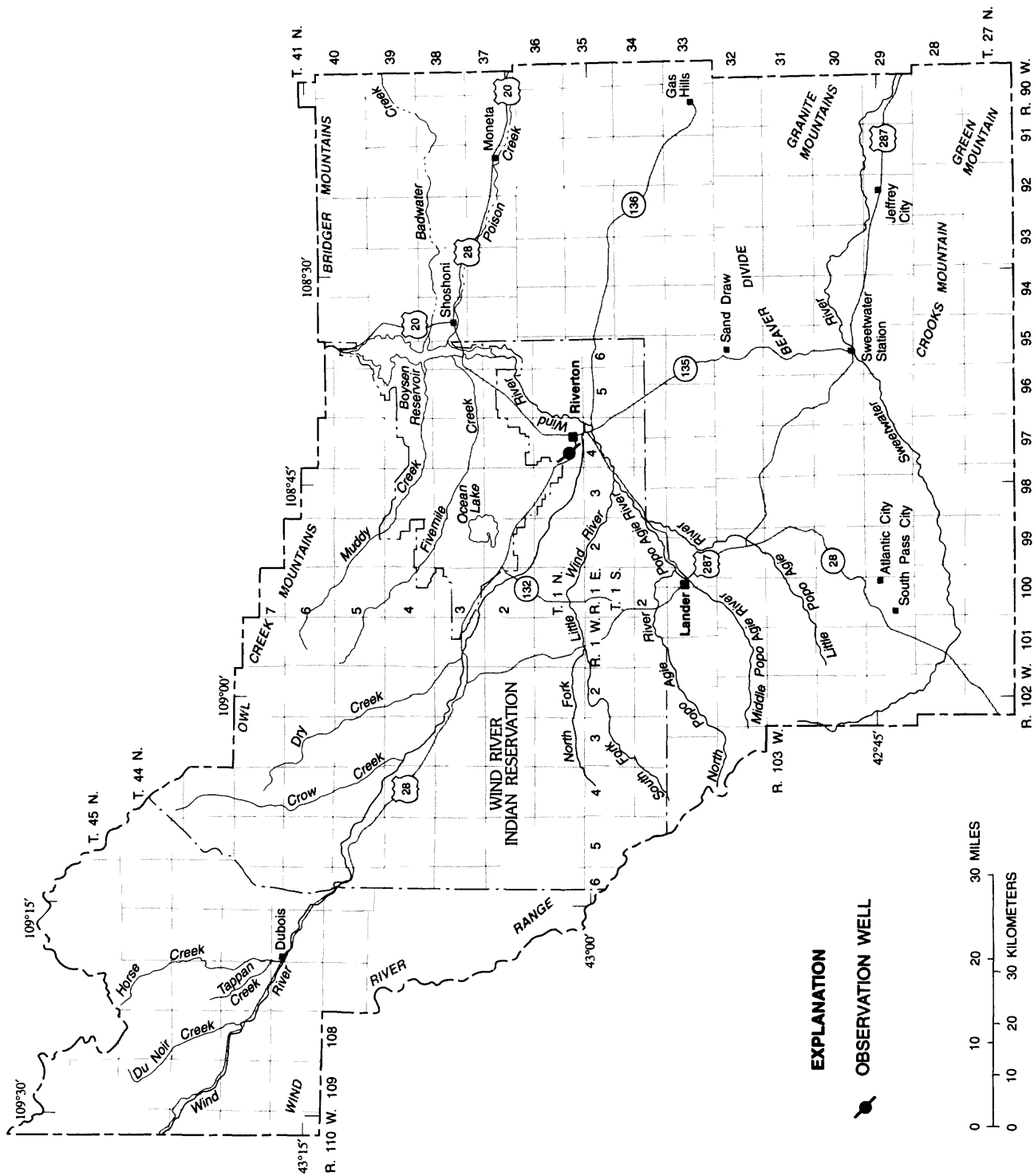


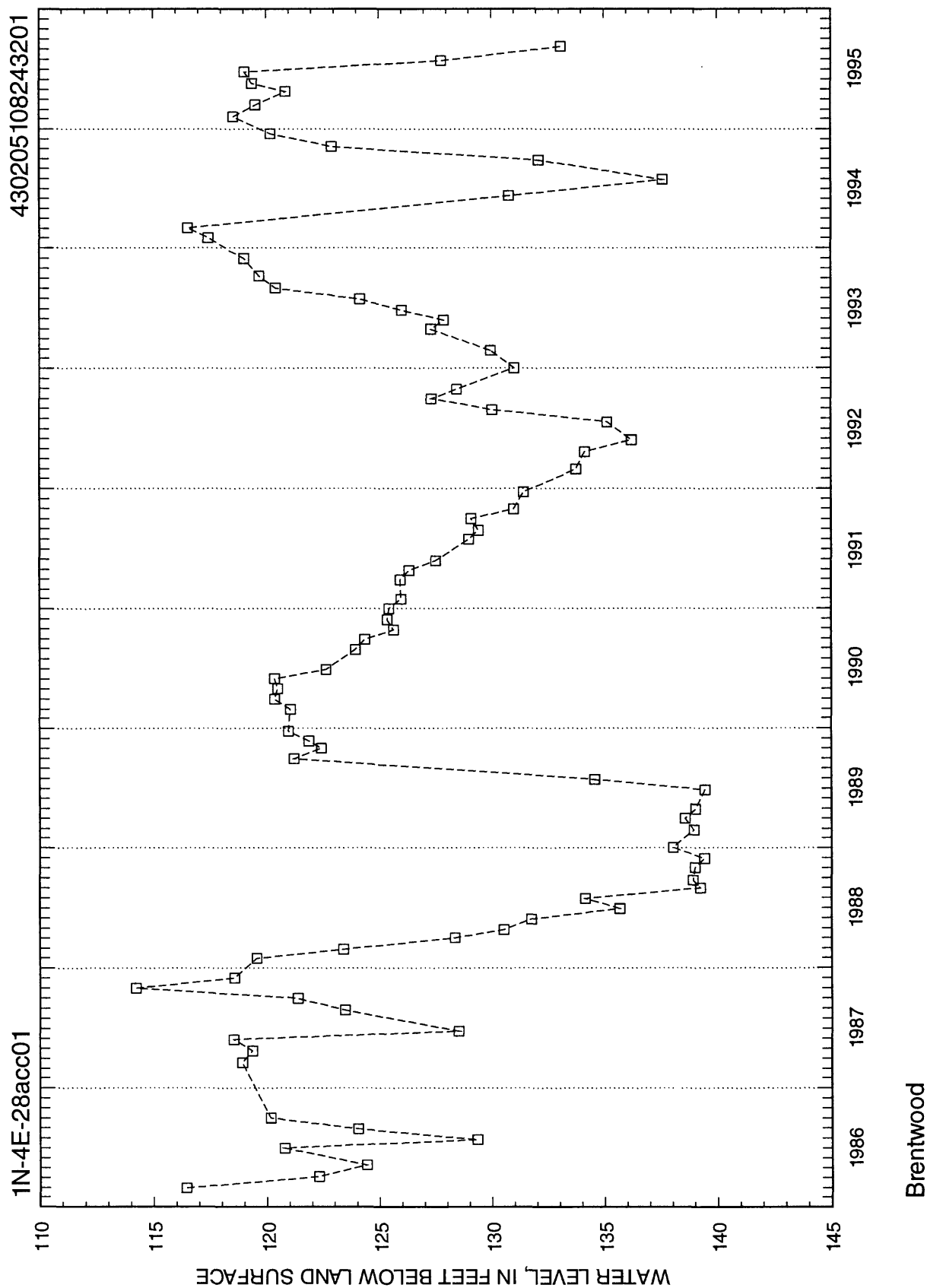
Figure 10. Location of observation well in Fremont County, Wyoming.

Record of observation well in Fremont County, Wyoming, and highest and lowest recorded water level, in feet below land surface. Individual water-level measurements made by the U.S. Geological Survey. Numbering system for well and explanation of column headings for table and hydrograph are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
1N-4E-28acc01	440	U	124WDRV	1983-95	¹ 114.22	10-87	¹ 139.45	06-89

¹From hand-measured data.

FREMONT COUNTY



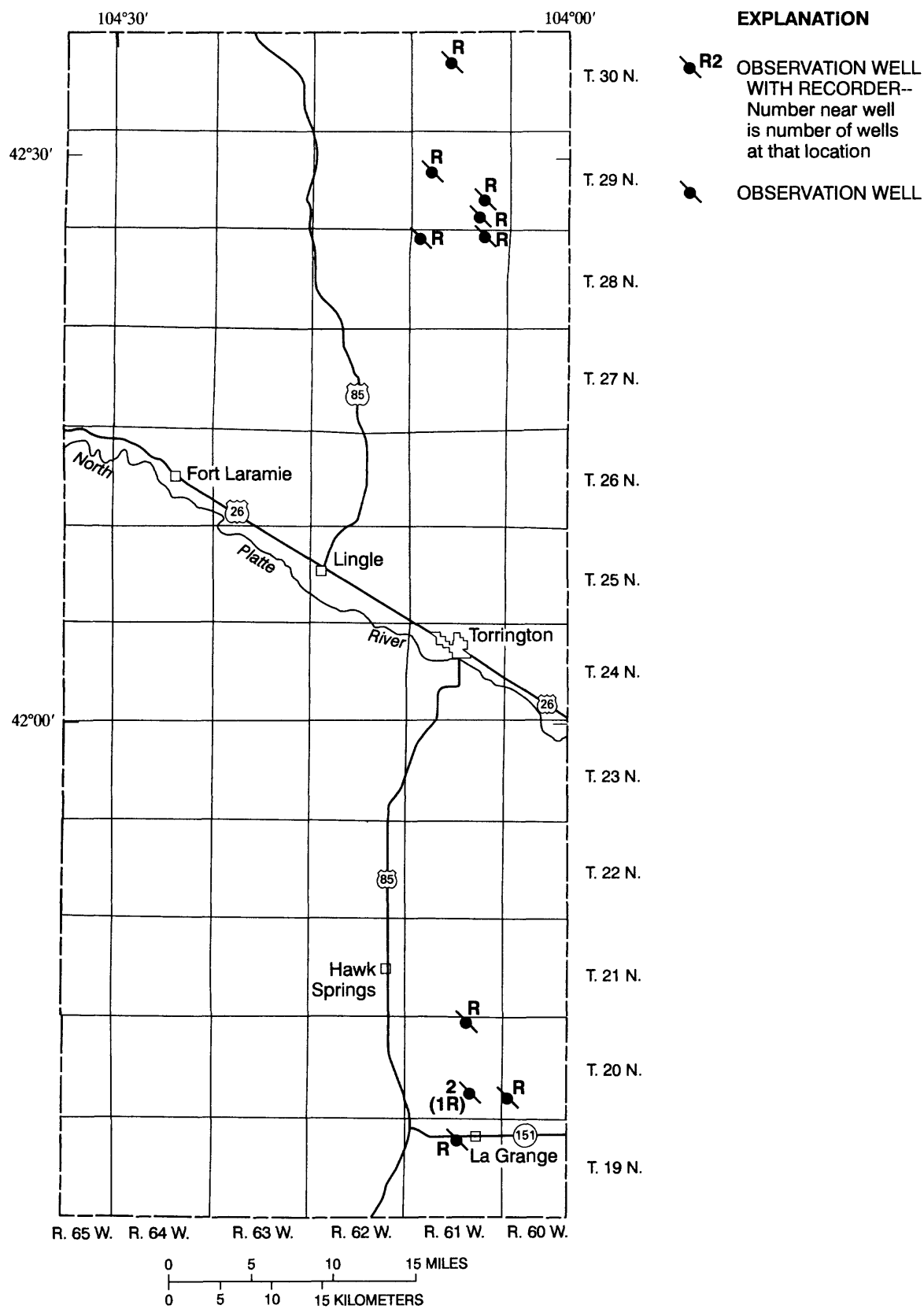


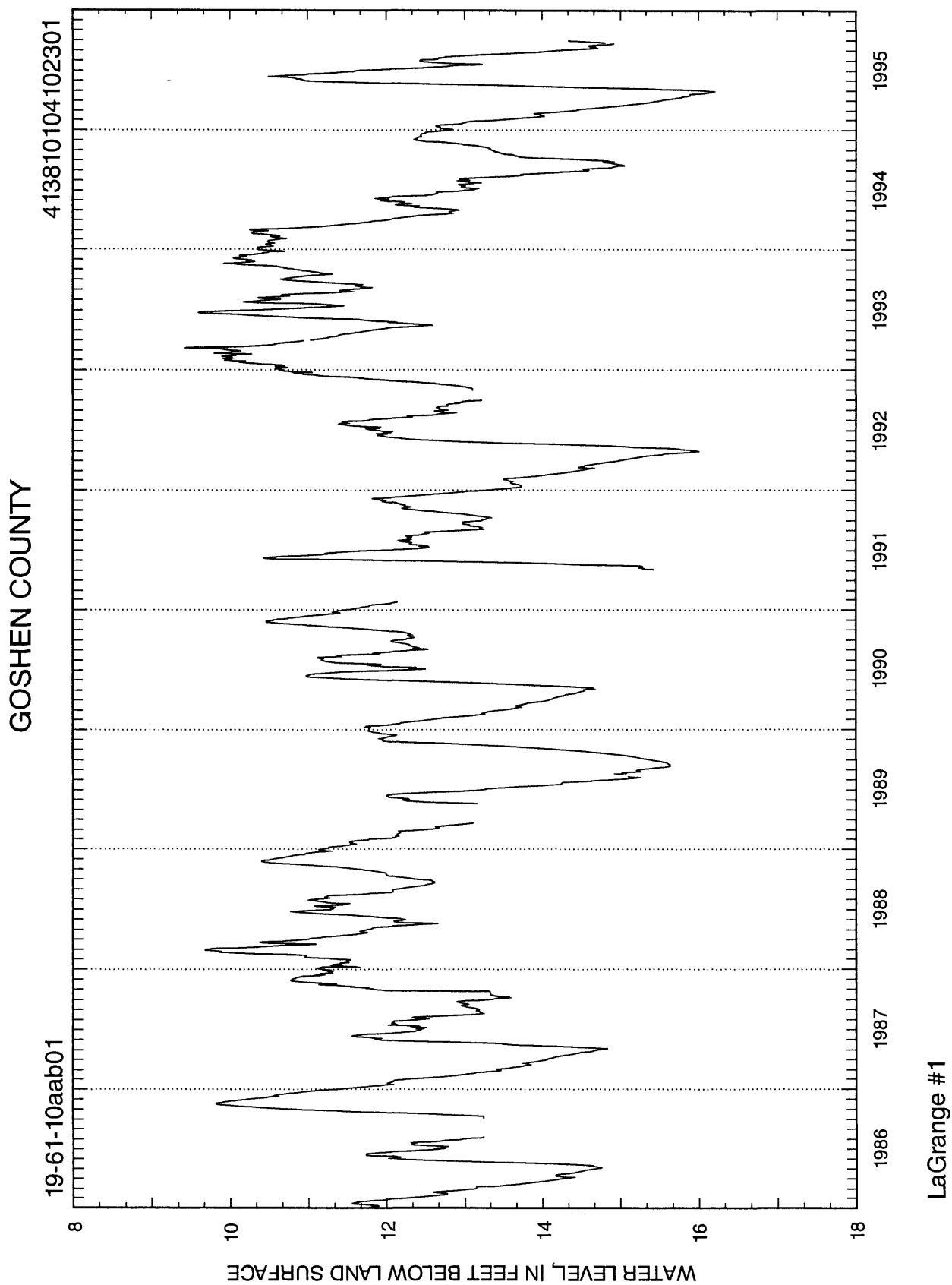
Figure 11. Location of observation wells in Goshen County, Wyoming.

Records of observation wells in Goshen County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous and individual water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

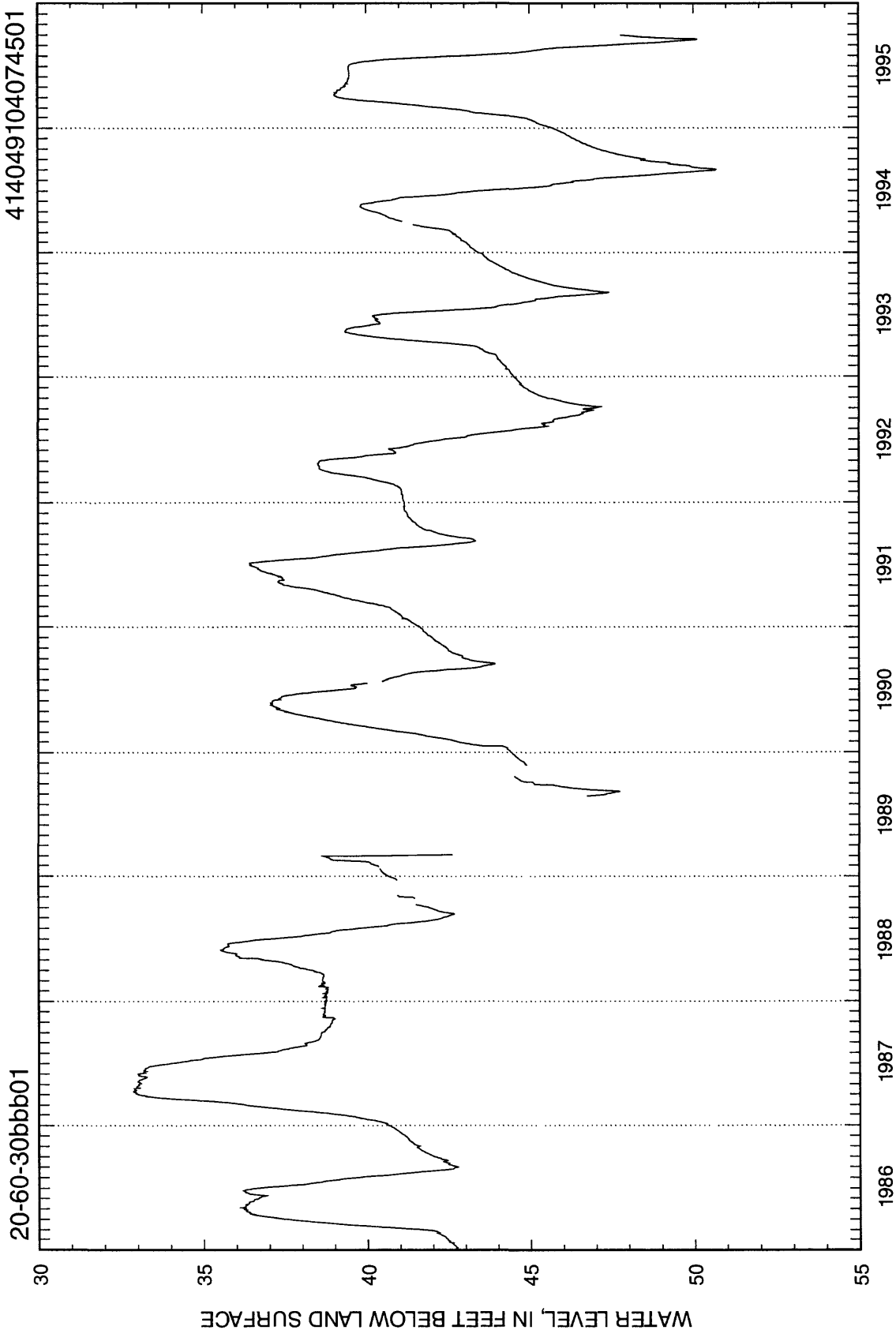
Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
19-61-10aab01	220	U	123BRUL	1980-95	8.56	06-83	16.20	04-95
20-60-30bbb01	70	U	123BRUL	1978-95	31.40	06-83	¹ 61.25	07-78
20-61-03dad01	100	U	123CDRN	1980-95	16.85	06-83	25.74	01-90
20-61-23bdb02	98	U	123BRUL	1978-95	2.10	04-84	¹ 26.74	09-78
20-61-23ccc01	82	U	111ALVM	1972-95	9.89	05-87	¹ 32.59	09-78
28-61-02ccd01	255	U	122ARKR	1986-95	161.31	05-86	167.33	09-95
28-61-06aba01	220	U	122ARKR	1979-95	127.23	05-79	136.29	09-95
29-61-17aad01	220	U	122ARKR	1980-95	124.50	01-81	127.92	04-93
29-61-23abb01	300	U	122ARKR	1979-95	² 198.29	06-87	214.76	03-95
29-61-26cbb01	200	U	122ARKR	1980-95	131.89	05-81	139.04	09-95
30-61-09bbb01	220	U	122ARKR	1981-95	80.61	05-81	85.86	09-92

¹From hand-measured data.

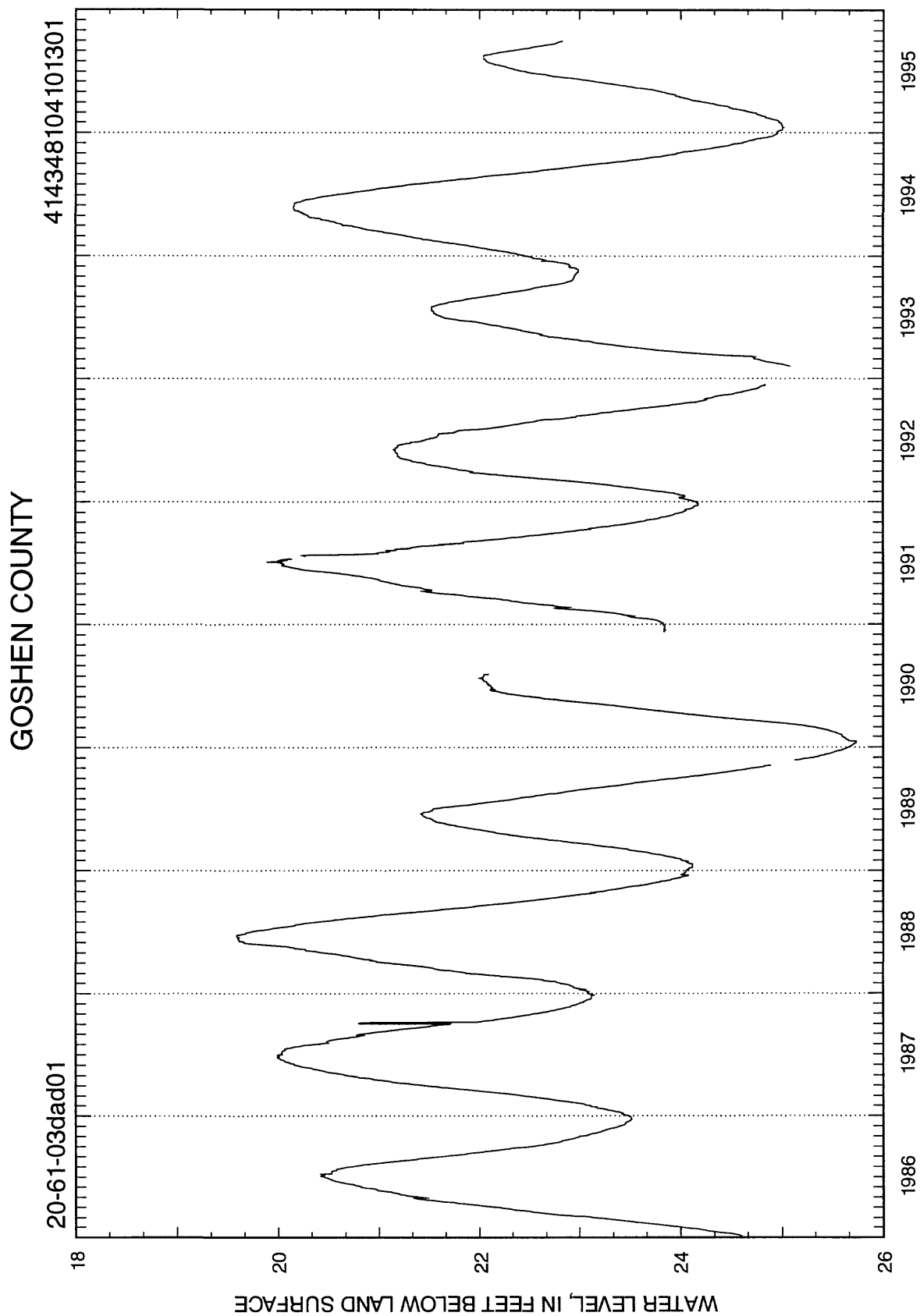
²Measurement affected by slug test.



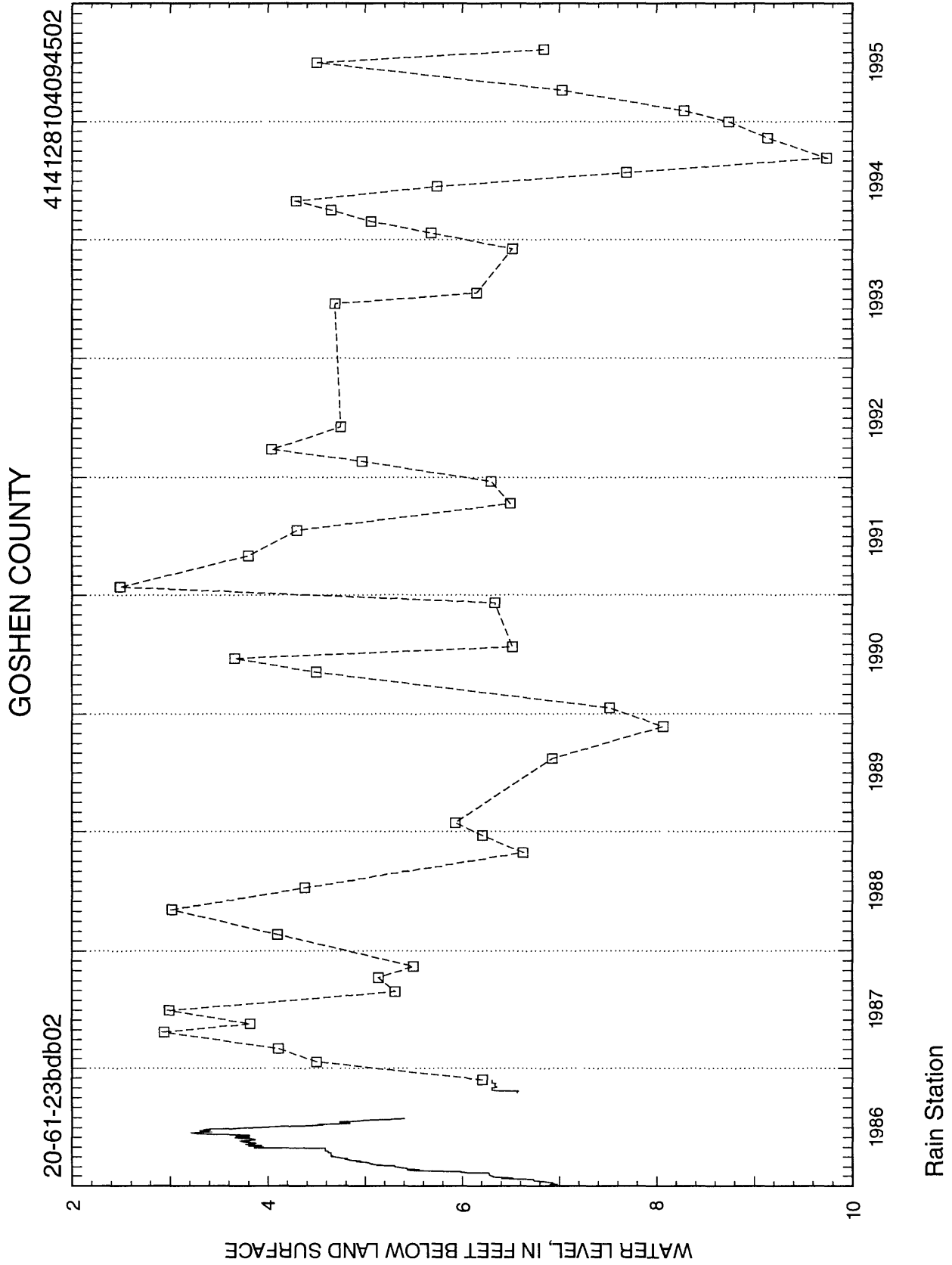
GOSHEN COUNTY

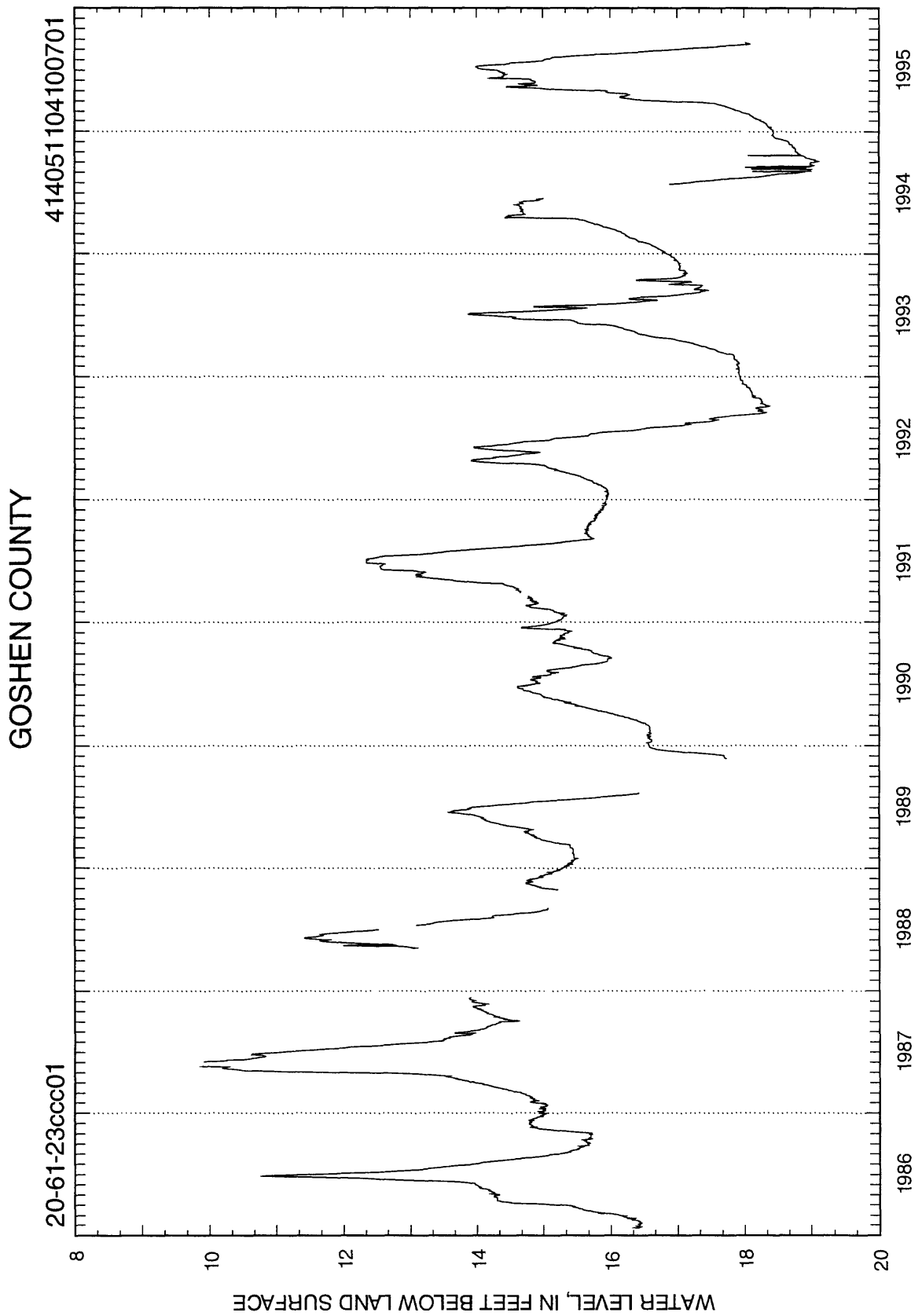


LaGrange #2



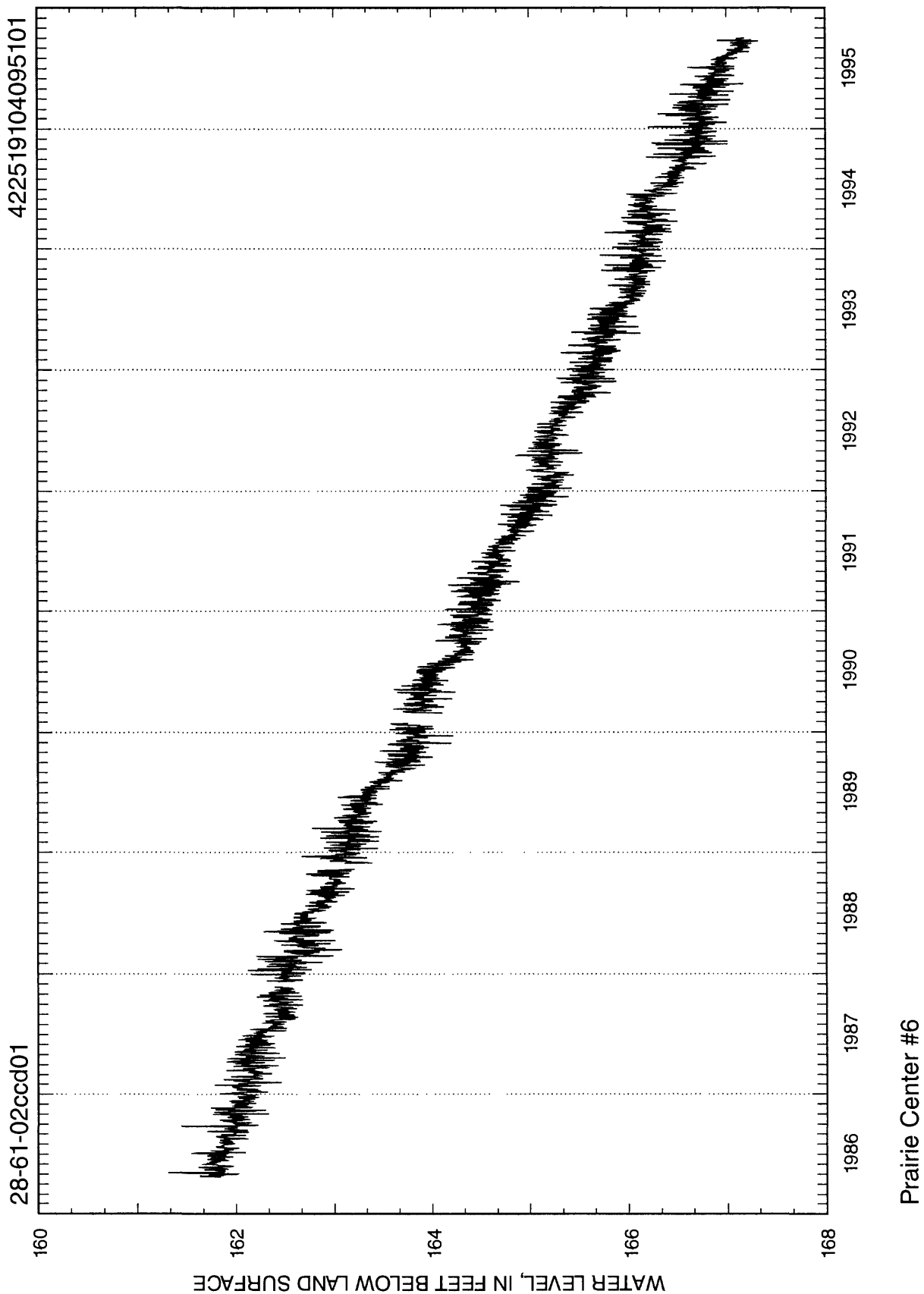
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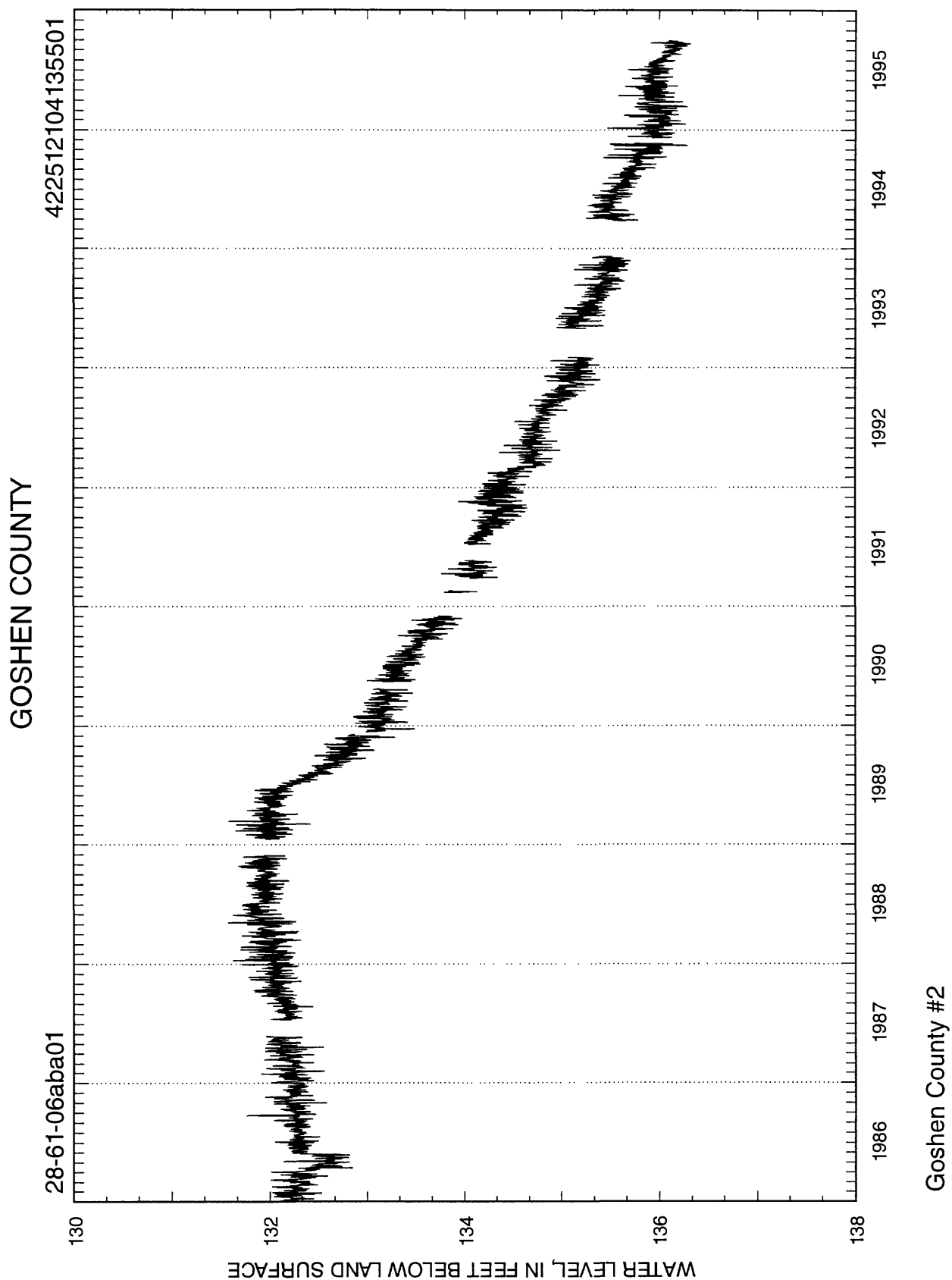




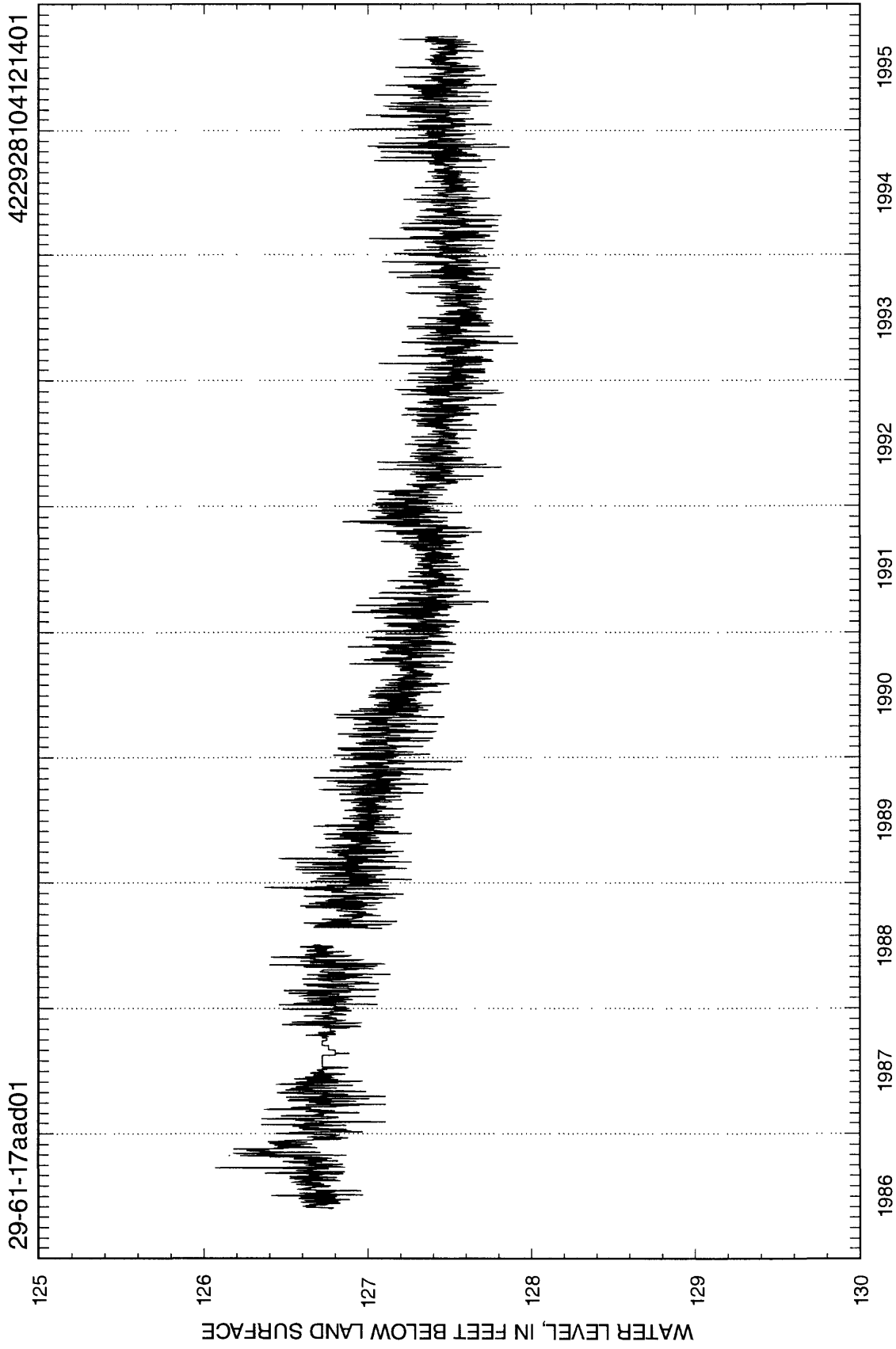
Curt Meier

GOSHEN COUNTY

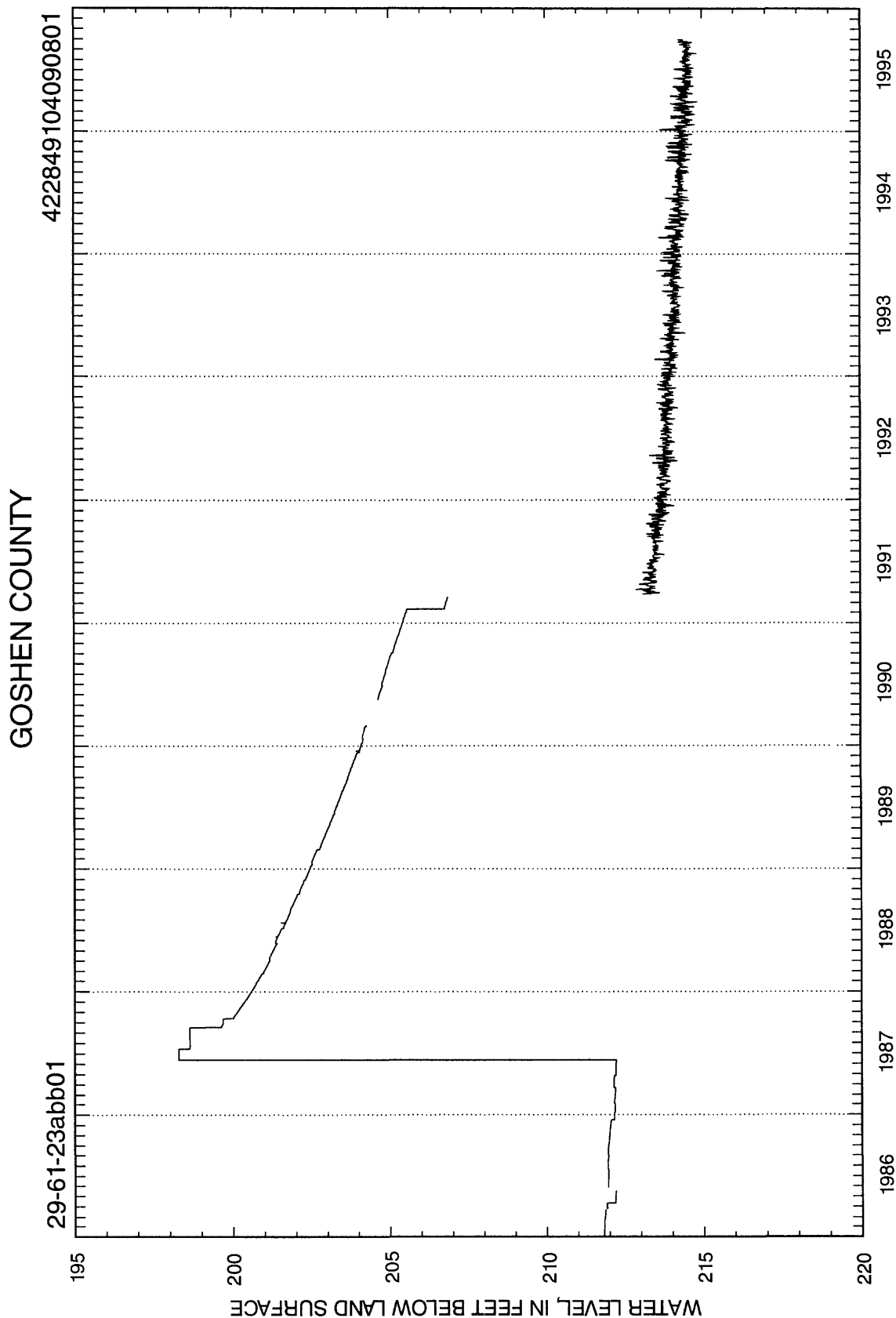




GOSHEN COUNTY

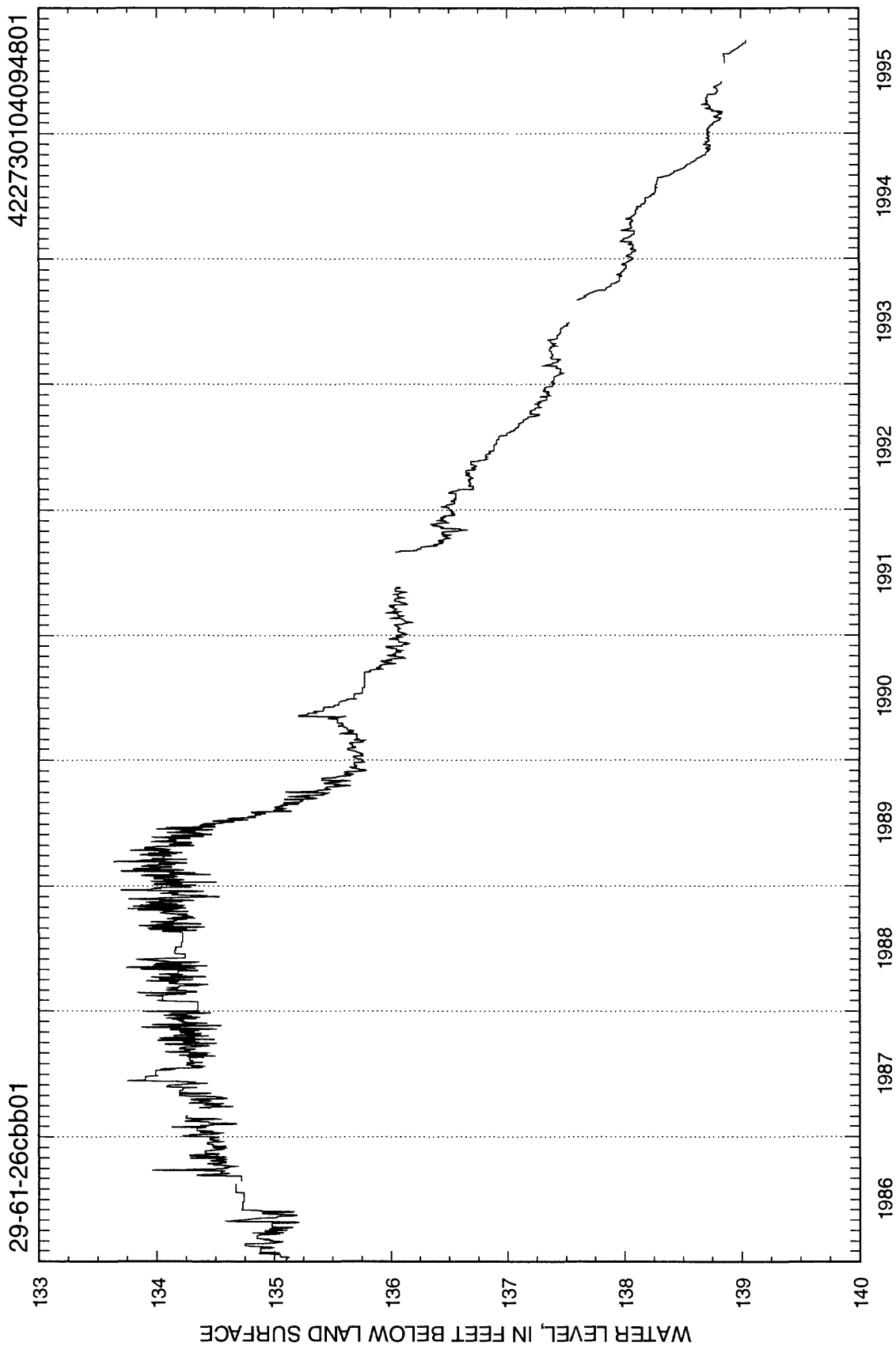


Prairie Center #4

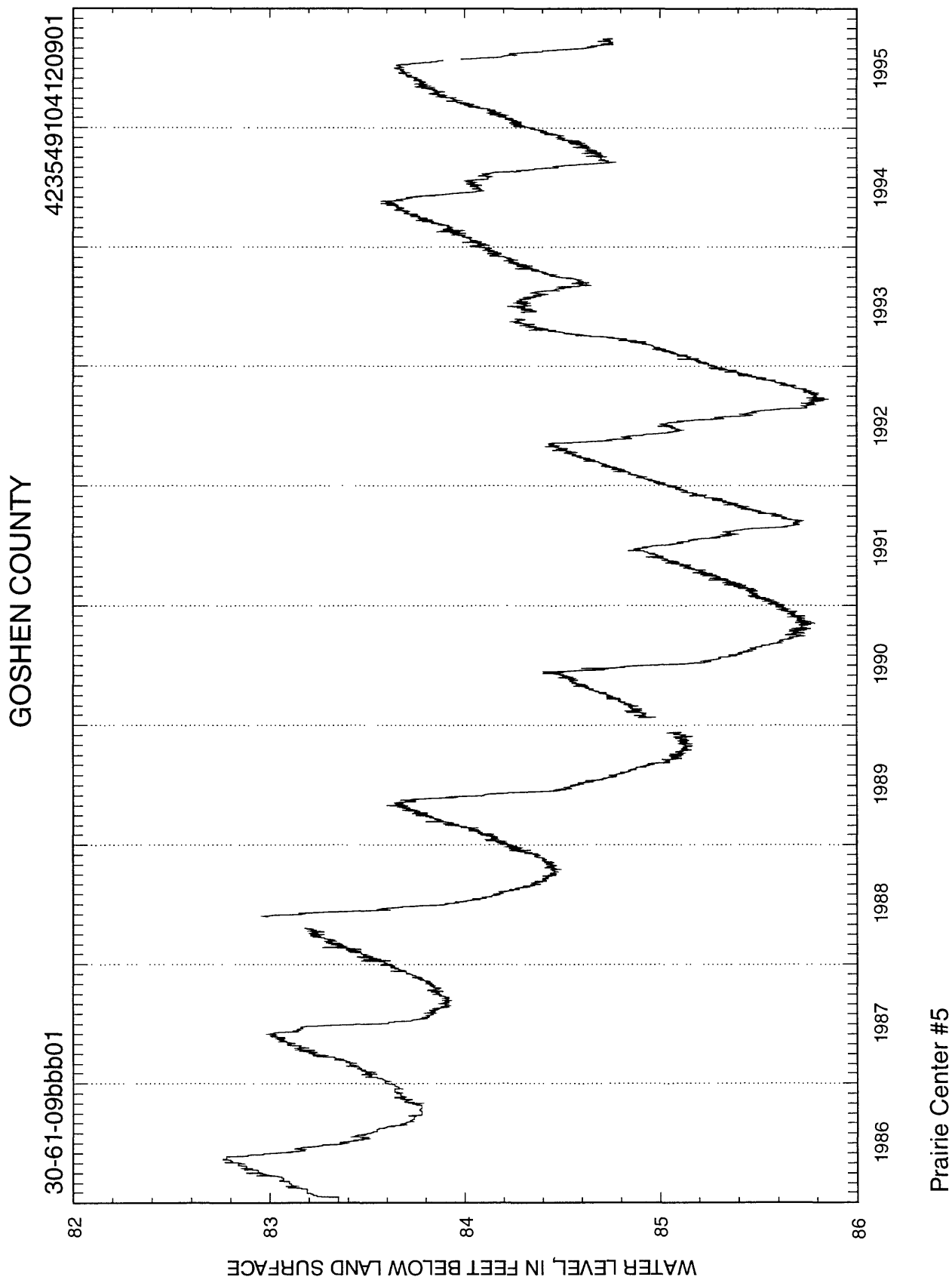


Goshen County #1
 Slug test by instantaneous recharge conducted in June 1987.

GOSHEN COUNTY



Prairie Center #3



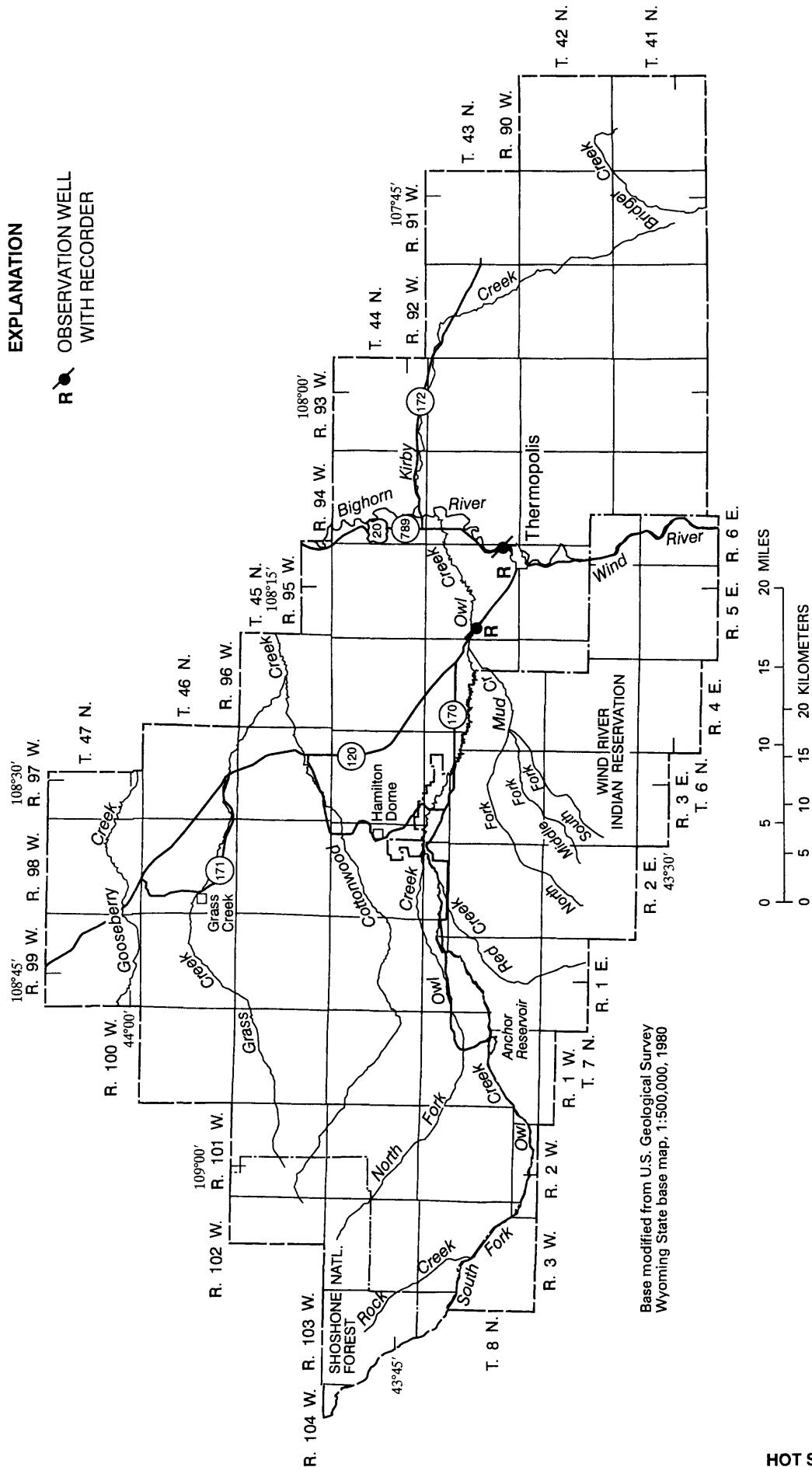
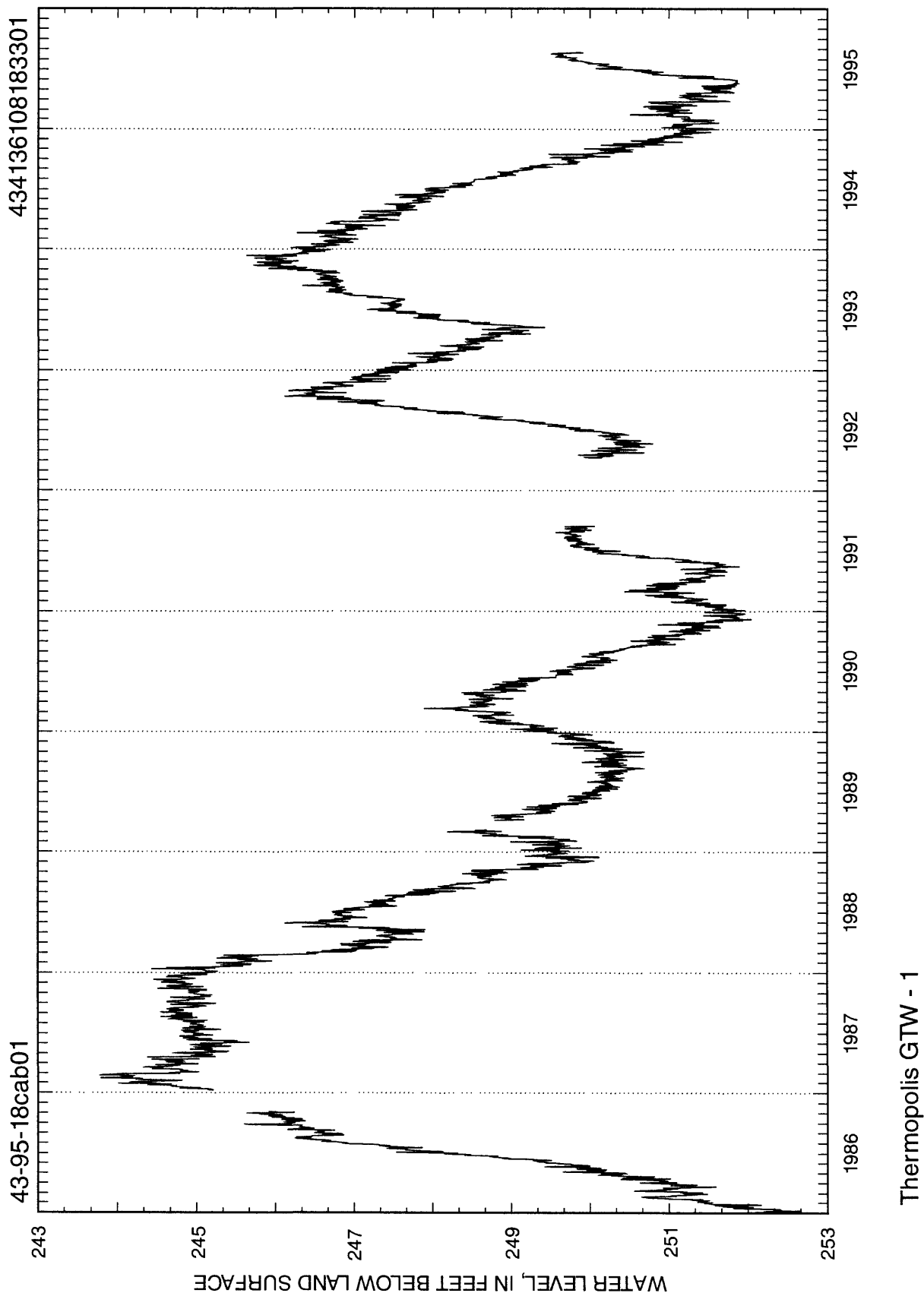


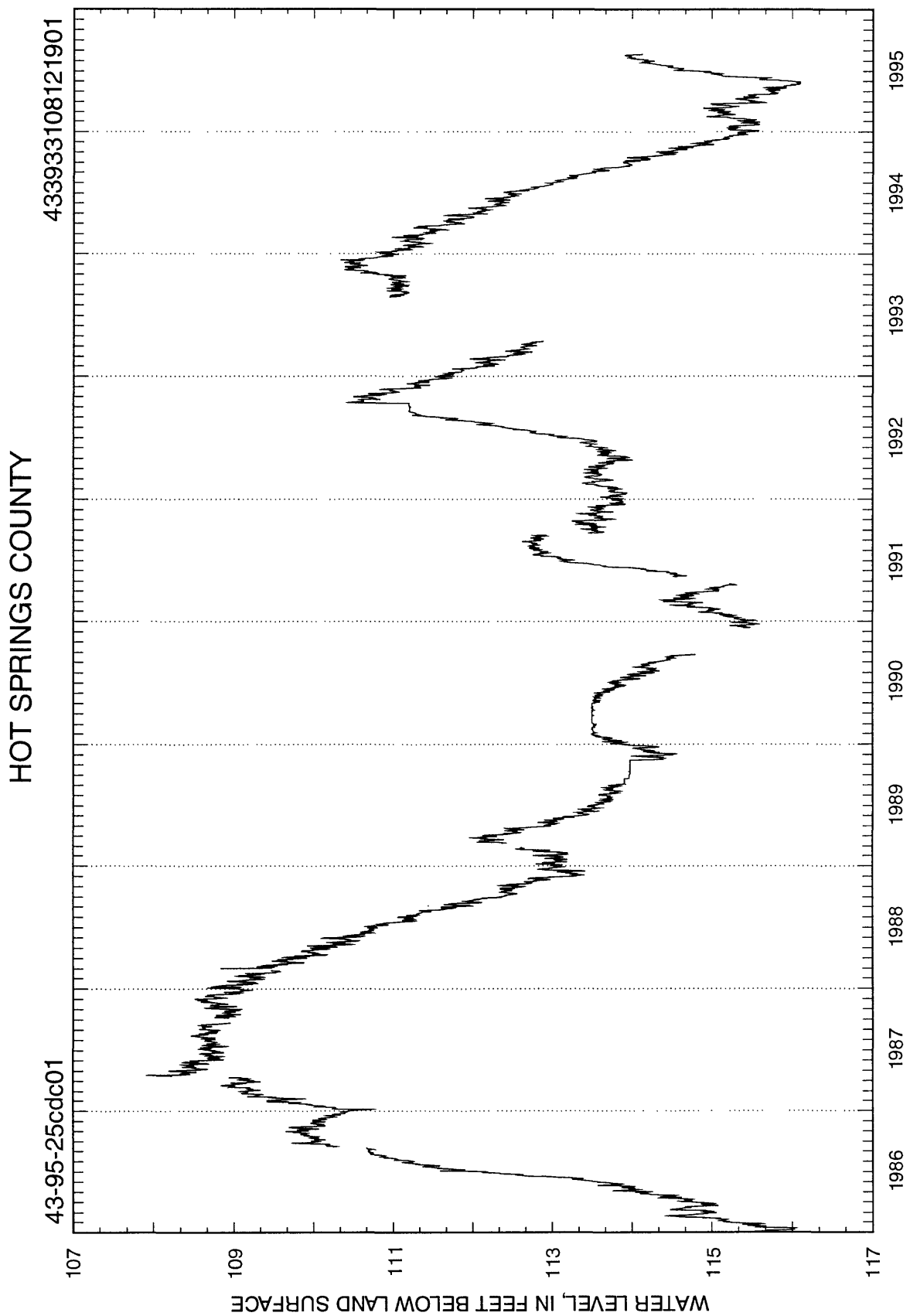
Figure 12. Location of observation wells in Hot Springs County, Wyoming.

Records of observation wells in Hot Springs County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
43-95-18cab01	354	U	317TSLP	1983-95	243.79	02-87	253.74	09-83
43-95-25cdc01	228	U	311PRKC	1983-95	107.91	04-87	116.11	09-85

HOT SPRINGS COUNTY





Thermopolis GTW - 3

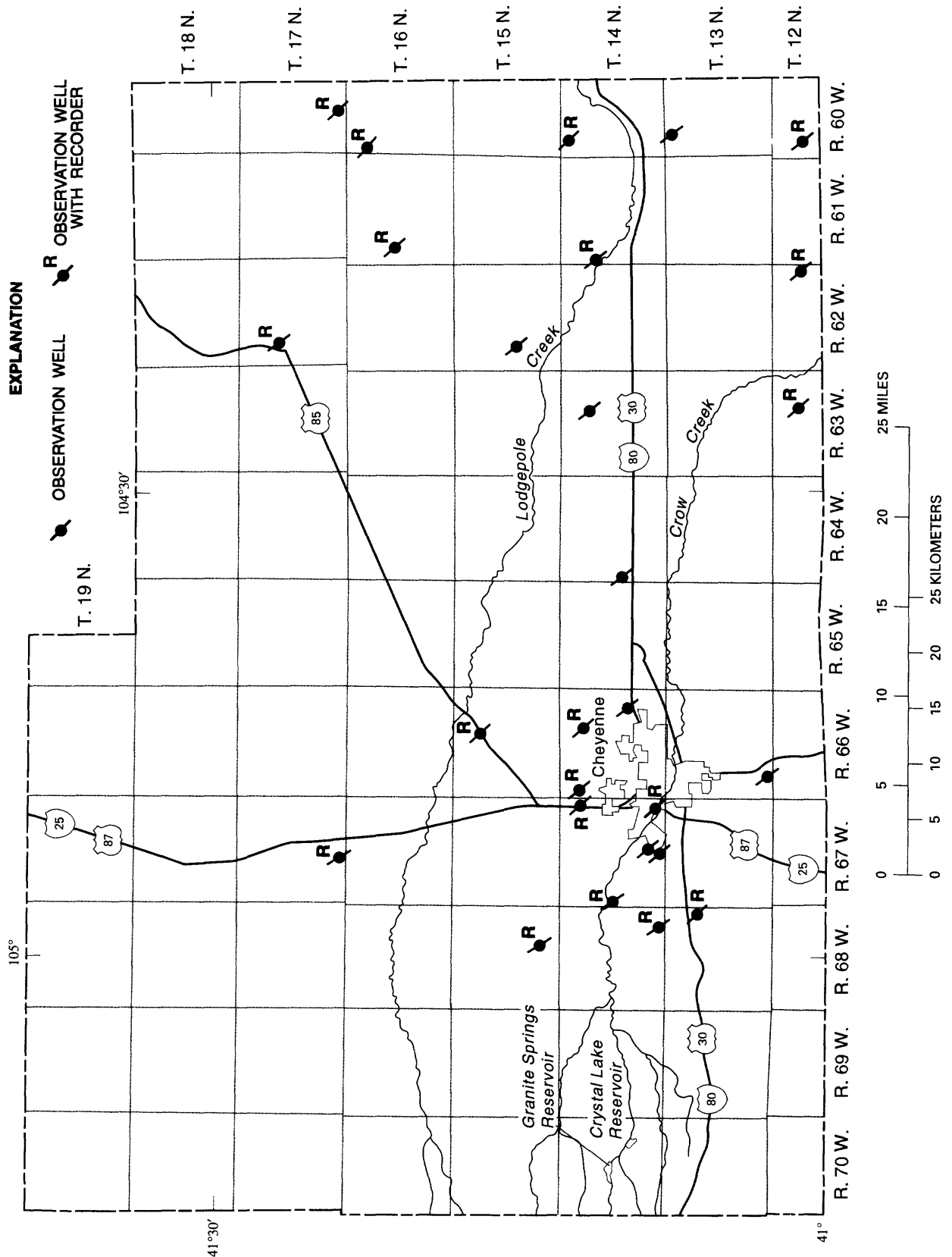


Figure 13. Location of observation wells in Laramie County, Wyoming.

Records of observation wells in Laramie County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous and individual water-level measurements provided by the Wyoming State Engineer's Office, continuous water-level measurements also provided by the U.S. Geological Survey. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

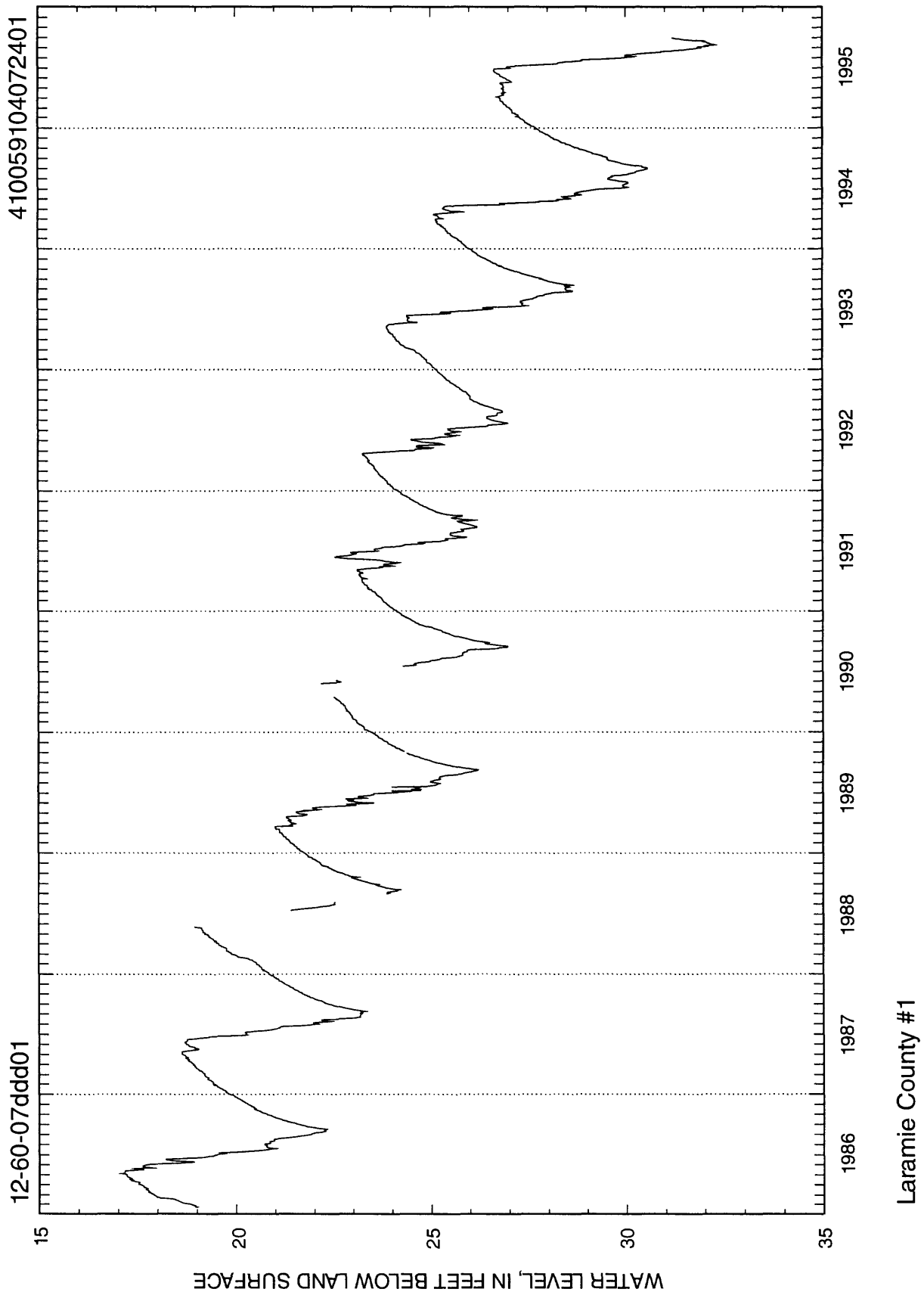
Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
¹ 12-60-07ddd01	120	U	123BRUL	1978-95	14.90	05-80	32.30	09-95
¹ 12-62-13baa01	198	U	111TRRC	1975-95	38.53	05-75	70.38	08-94
¹ 12-63-15aaa02	110	U	123BRUL	1973-95	14.11	04-74	46.86	09-78
¹ 13-60-05ccb01	100	U	123BRUL	1969-95	34.18	05-84	63.52	10-79
¹ 13-66-32bbd01	160	U	121OGLL	1986-95	³ 44.34	12-91	47.95	07-88
² 13-68-13ccc01	--	U	121OGLL	1942-50 1969-94	36.78	03-45	87.89	07-83
¹ 14-60-05bcb01	98	U	123BRUL	1957-95	28.96	04-85	59.18	09-95
¹ 14-61-18ddd01	90	U	123BRUL	1977-95	9.08	06-84	23.88	09-95
¹ 14-63-15aaa01	165	U	122ARKR	1977-95	45.48	06-80	³ 50.43	03-93
¹ 14-64-19bcc01	180	U	121OGLL	1977-95	³ 156.80	11-94	³ 159.83	09-92
¹ 14-66-07add01	300	U	121OGLL	1984-95	80.18	03-92	107.57	09-95
¹ 14-66-10aba01	190	U	121OGLL	1977-95	125.82	02-79	133.03	08-95
¹ 14-66-23ddd01	216	U	121OGLL	1986-95	³ 140.35	07-90	³ 141.67	02-92
¹ 14-67-12abb01	220	U	121OGLL	1984-95	93.62	03-89	114.04	07-89
² 14-67-18ddc01	229	U	121OGLL	1956-95	12.48	09-57	48.25	08-78
¹ 14-67-27bac01	140	U	121OGLL	1986-95	20.71	04-86	³ 23.91	08-89
¹ 14-67-34bbc01	162	U	121OGLL	1986-95	7.67	07-95	13.30	06-94 07-94
¹ 14-67-36acb01	24	U	121OGLL	1989-95	3.08	06-91	7.58	01-93
² 14-68-35ddc02	230	U	121OGLL	1969-95	91.00	03-92	113.26	09-81
¹ 15-62-20aaa01	165	U	121OGLL	1977-95	96.03	05-89	³ 100.03	05-91
¹ 15-66-10bab01	210	U	121OGLL	1977-95	58.60	11-88	86.70	09-78
¹ 15-68-27ccc01	350	U	121OGLL	1984-95	165.84	09-86	174.30	01-85
¹ 16-60-07bbb02	215	U	121OGLL	1983-95	147.06	05-91	149.55	09-83
¹ 16-61-17aaa01	285	U	121OGLL	1977-95	194.92	05-94	201.32	12-77
¹ 17-60-33cbb01	275	U	121OGLL	1975-95	177.52	05-75	215.47	11-94
¹ 17-62-17ccc01	360	U	121OGLL	1982-95	222.70	09-95	227.03	12-85
¹ 17-67-33baa01	200	U	121OGLL	1984-95	132.26	01-85	151.14	07-93

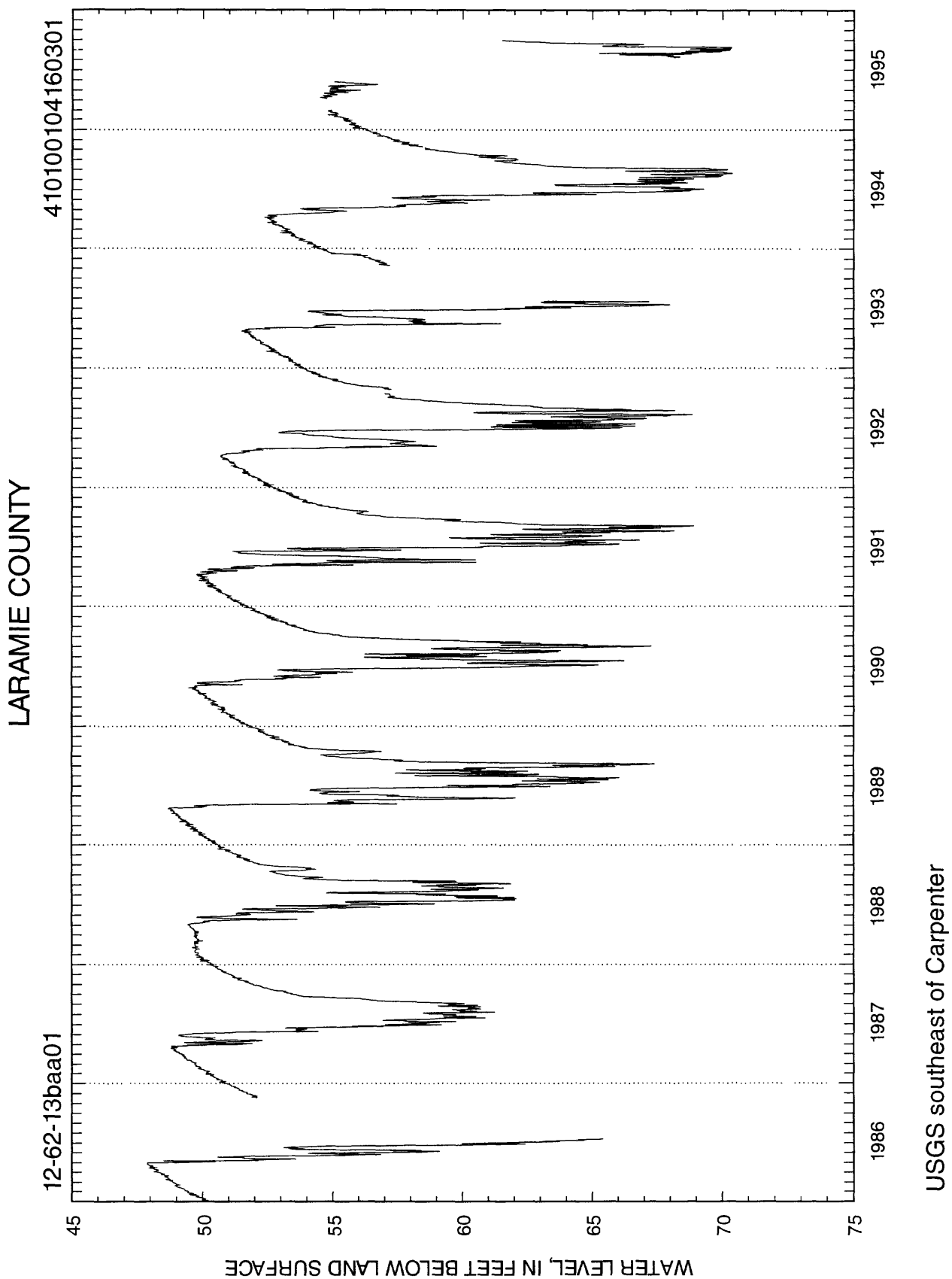
¹Measured by Wyoming State Engineer's Office.

²Measured by U.S. Geological Survey.

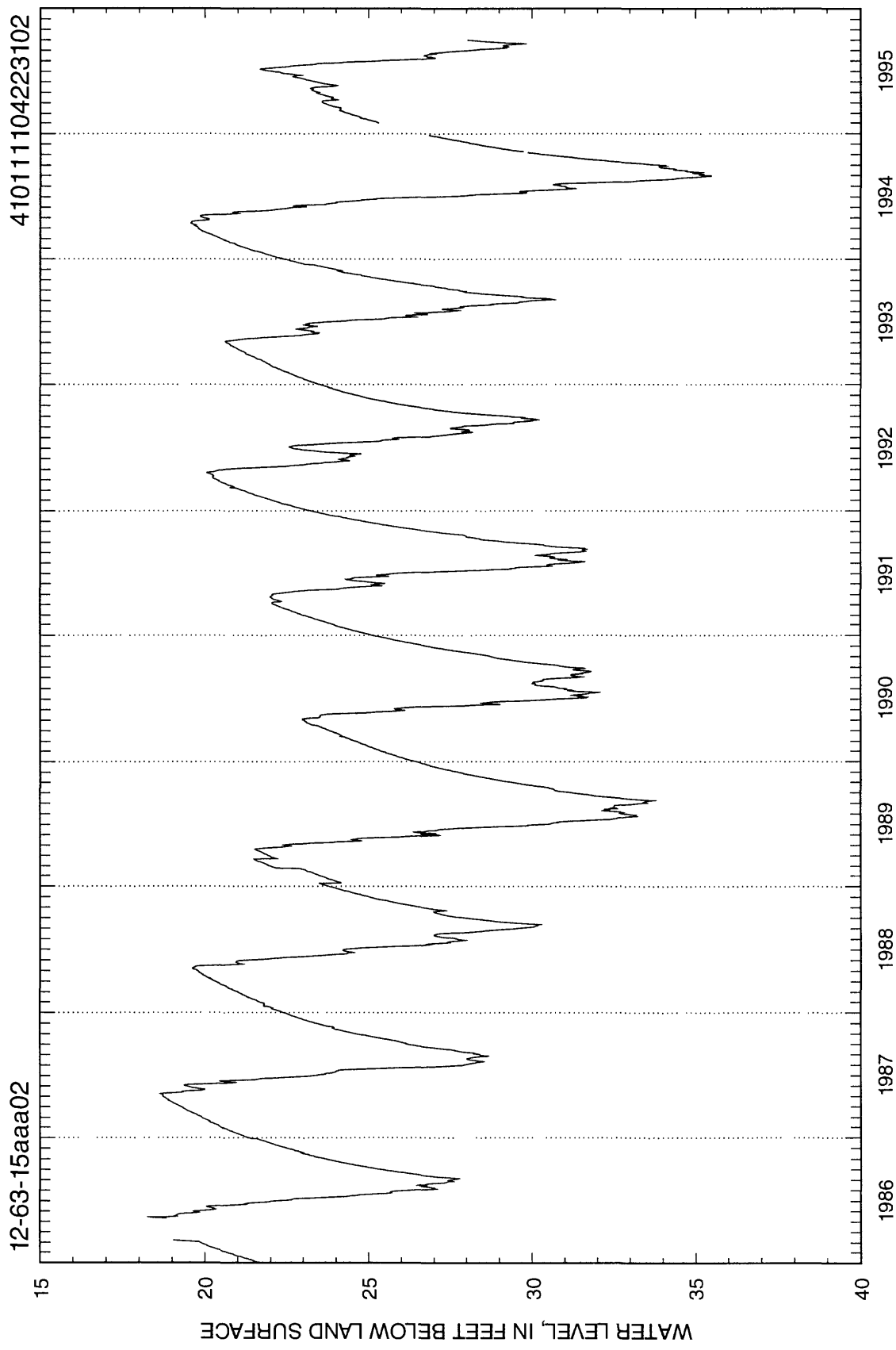
³From hand-measured data.

LARAMIE COUNTY

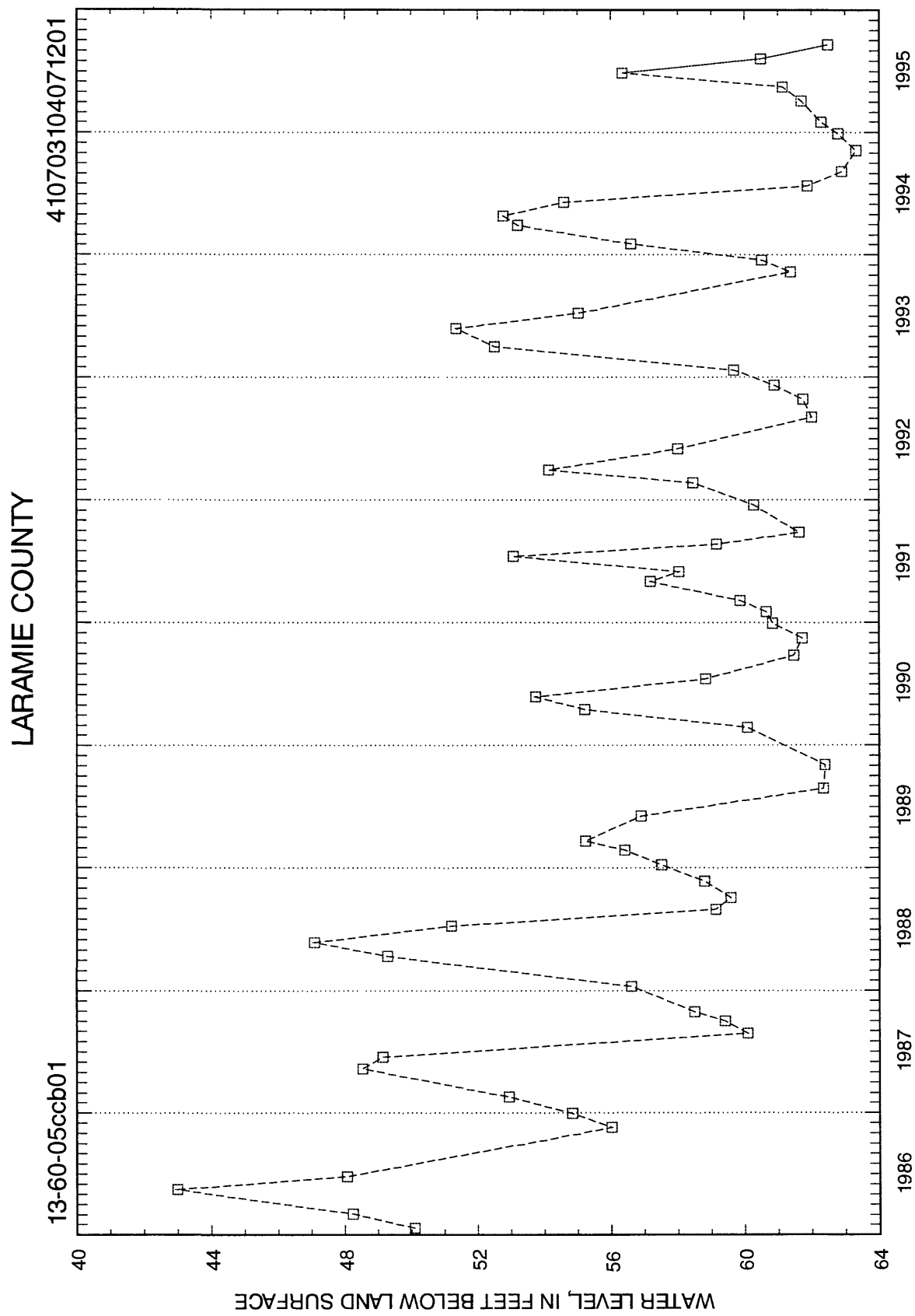




LARAMIE COUNTY

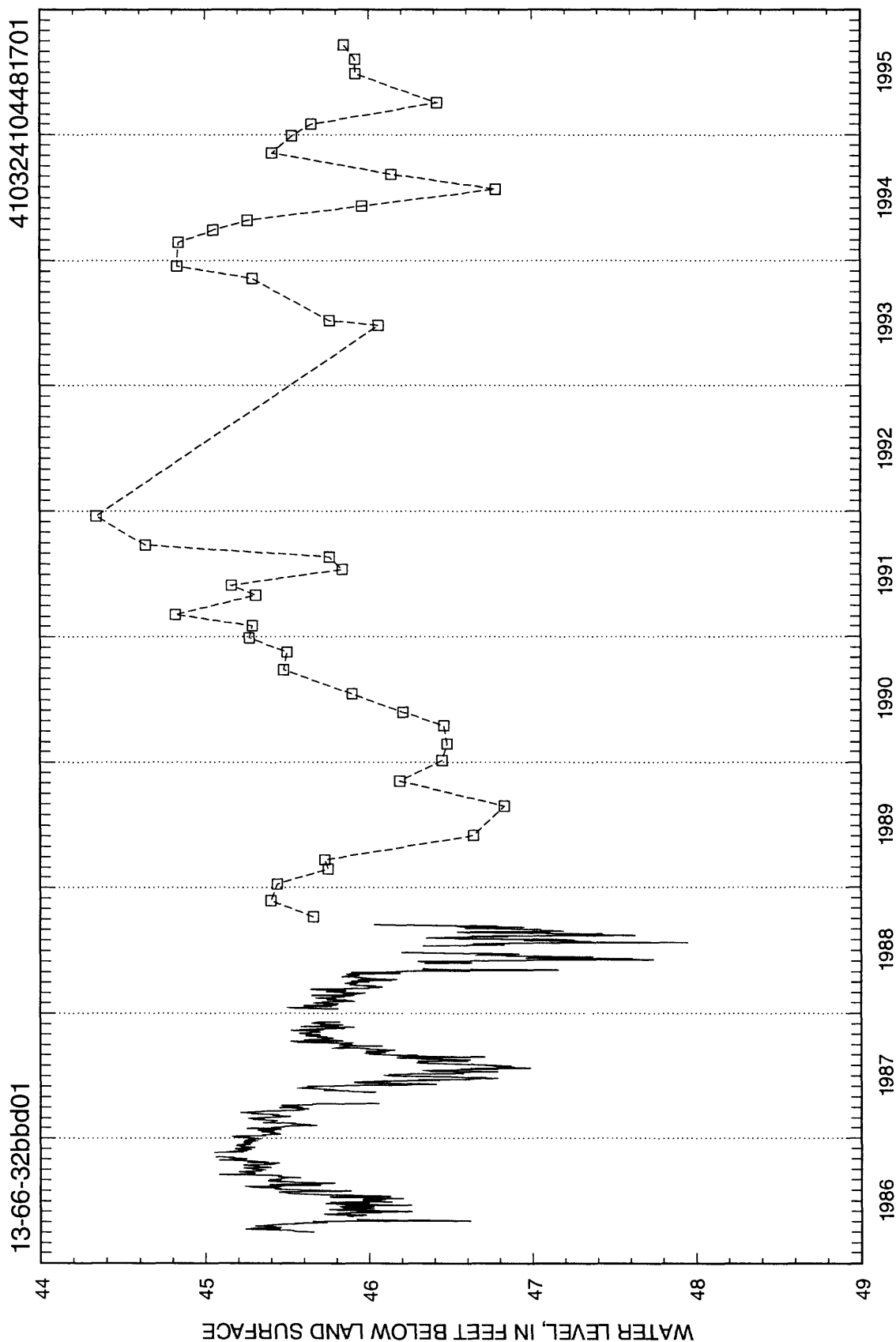


USGS southwest of Carpenter

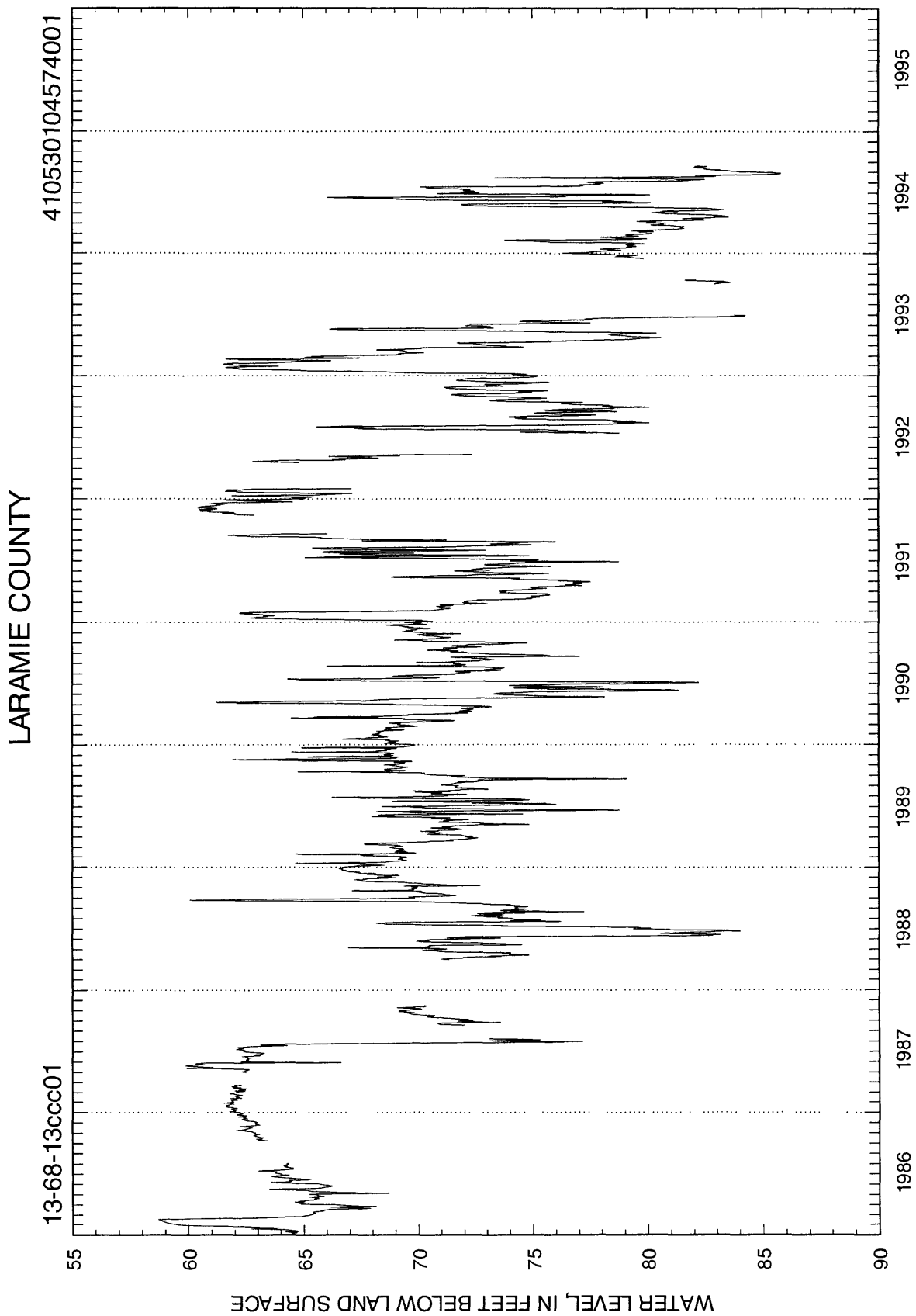


Elmer Glantz

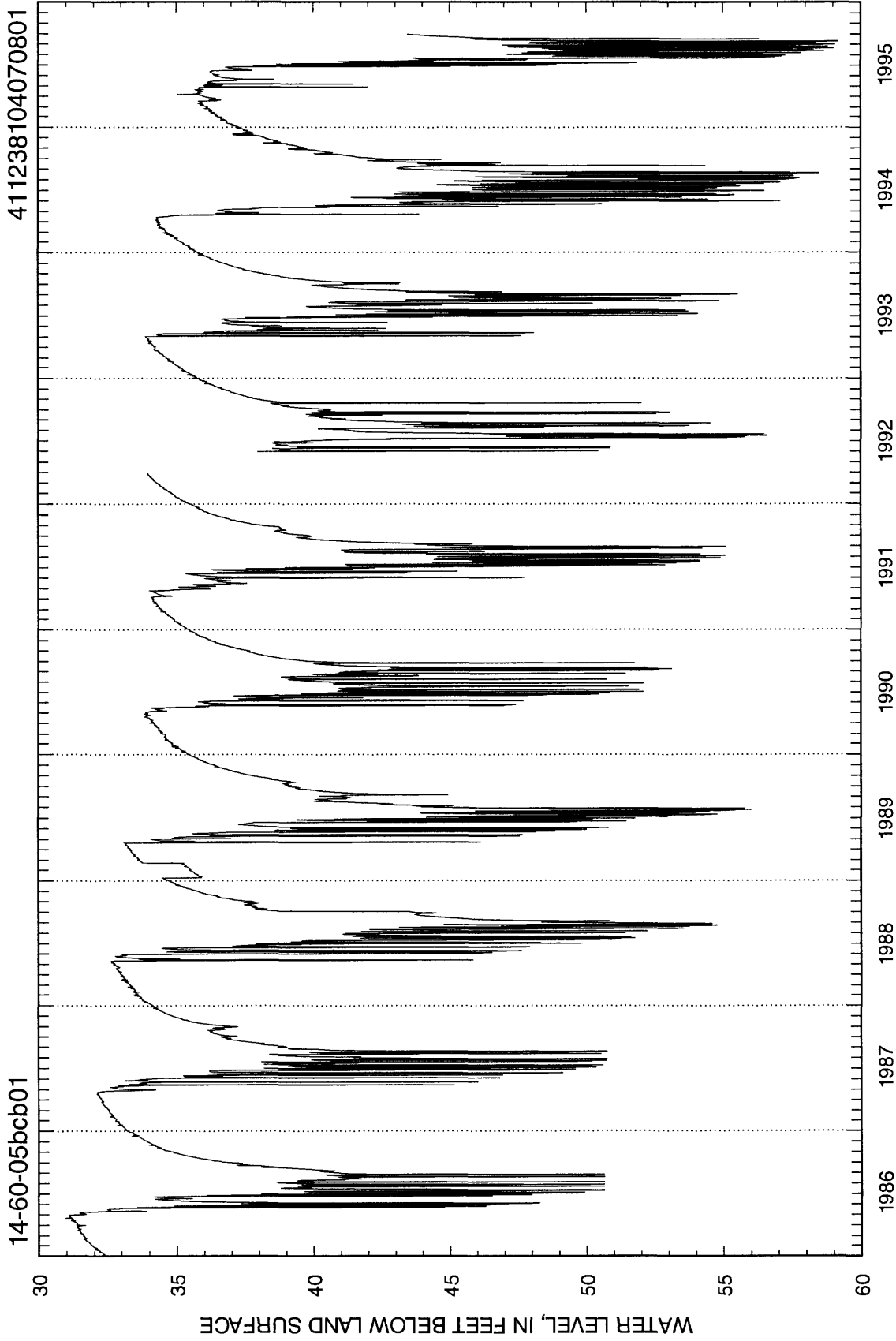
LARAMIE COUNTY



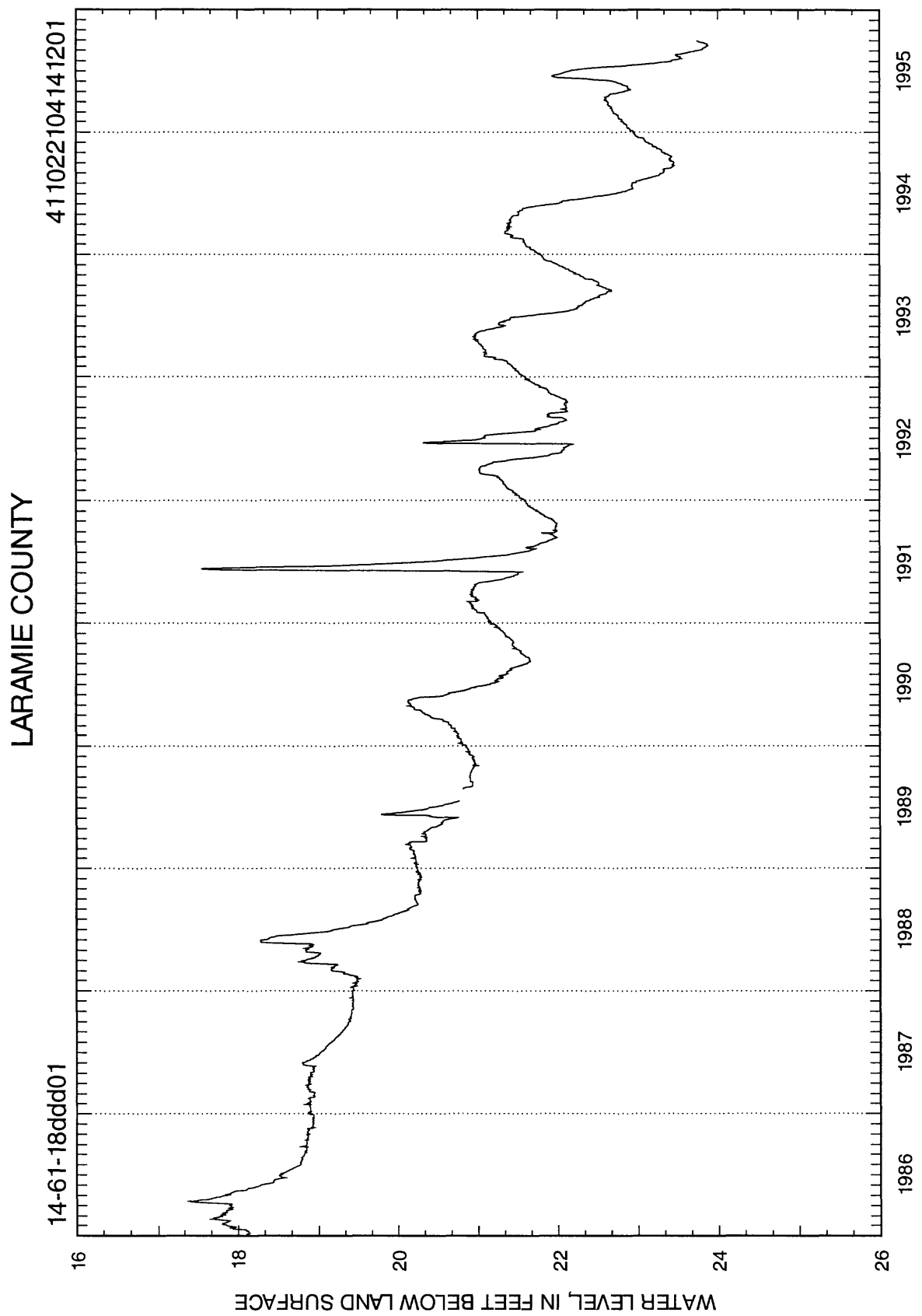
Laramie County #14



LARAMIE COUNTY

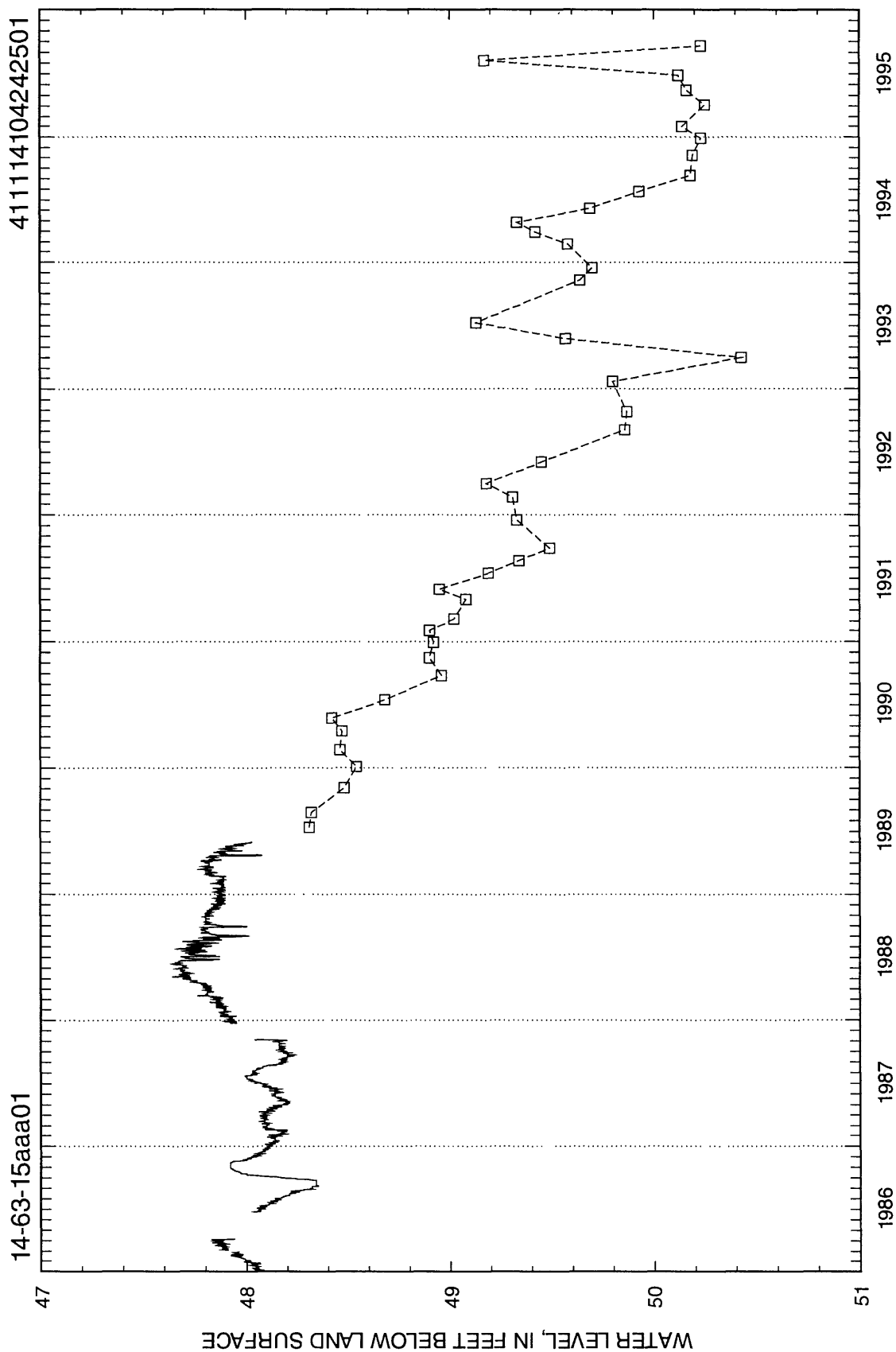


C. C. Gross

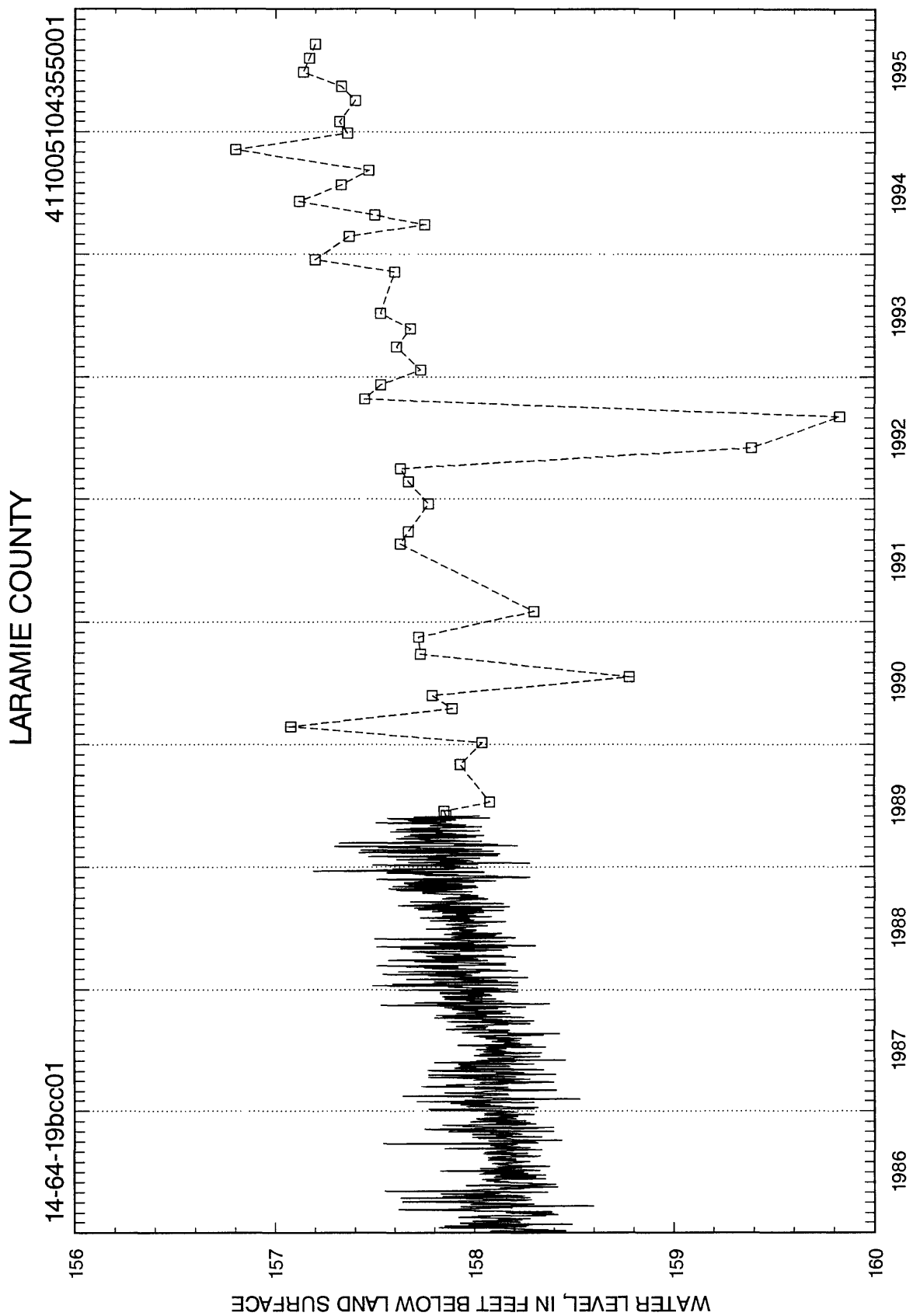


Laramie County #2

LARAMIE COUNTY

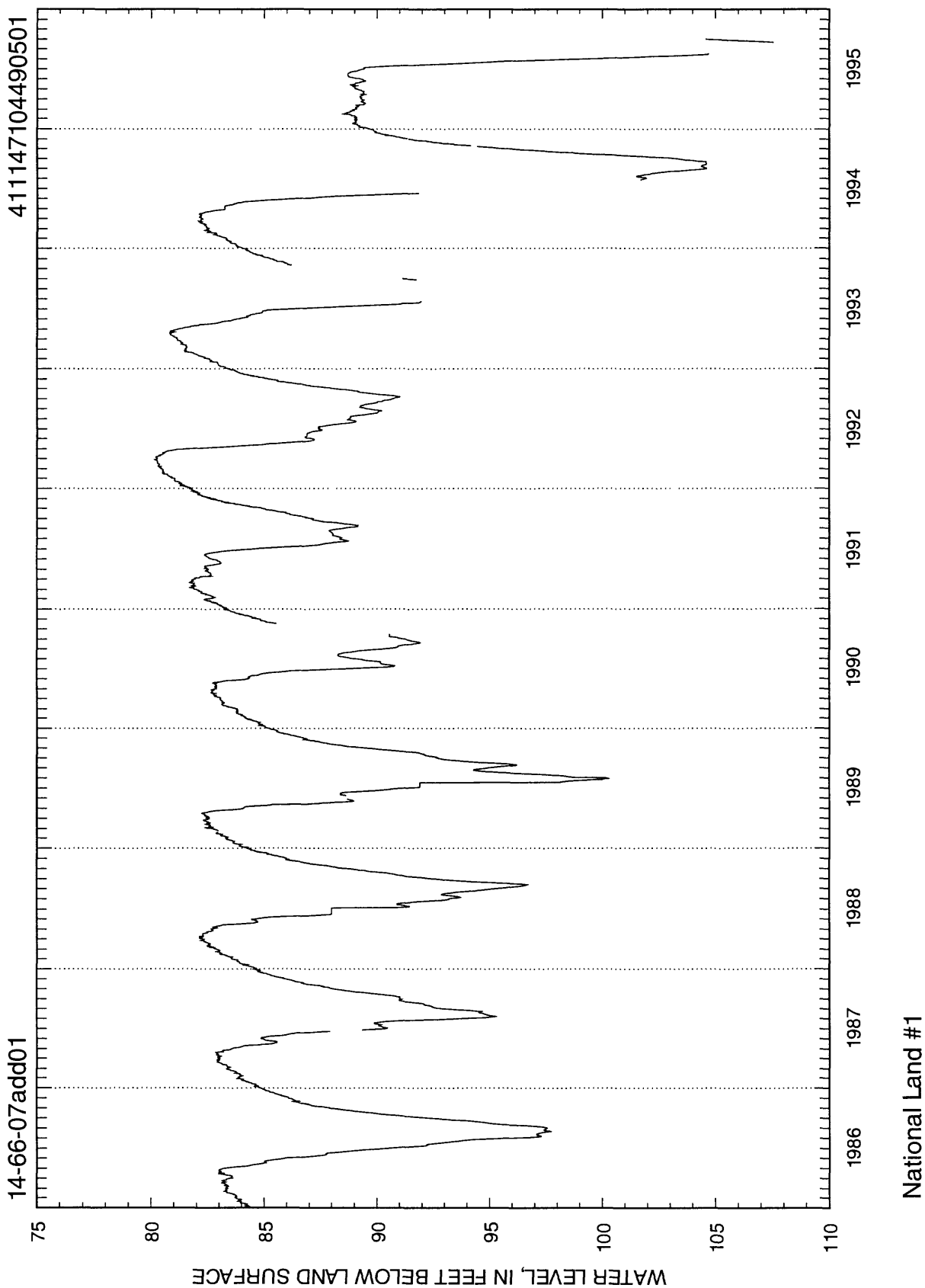


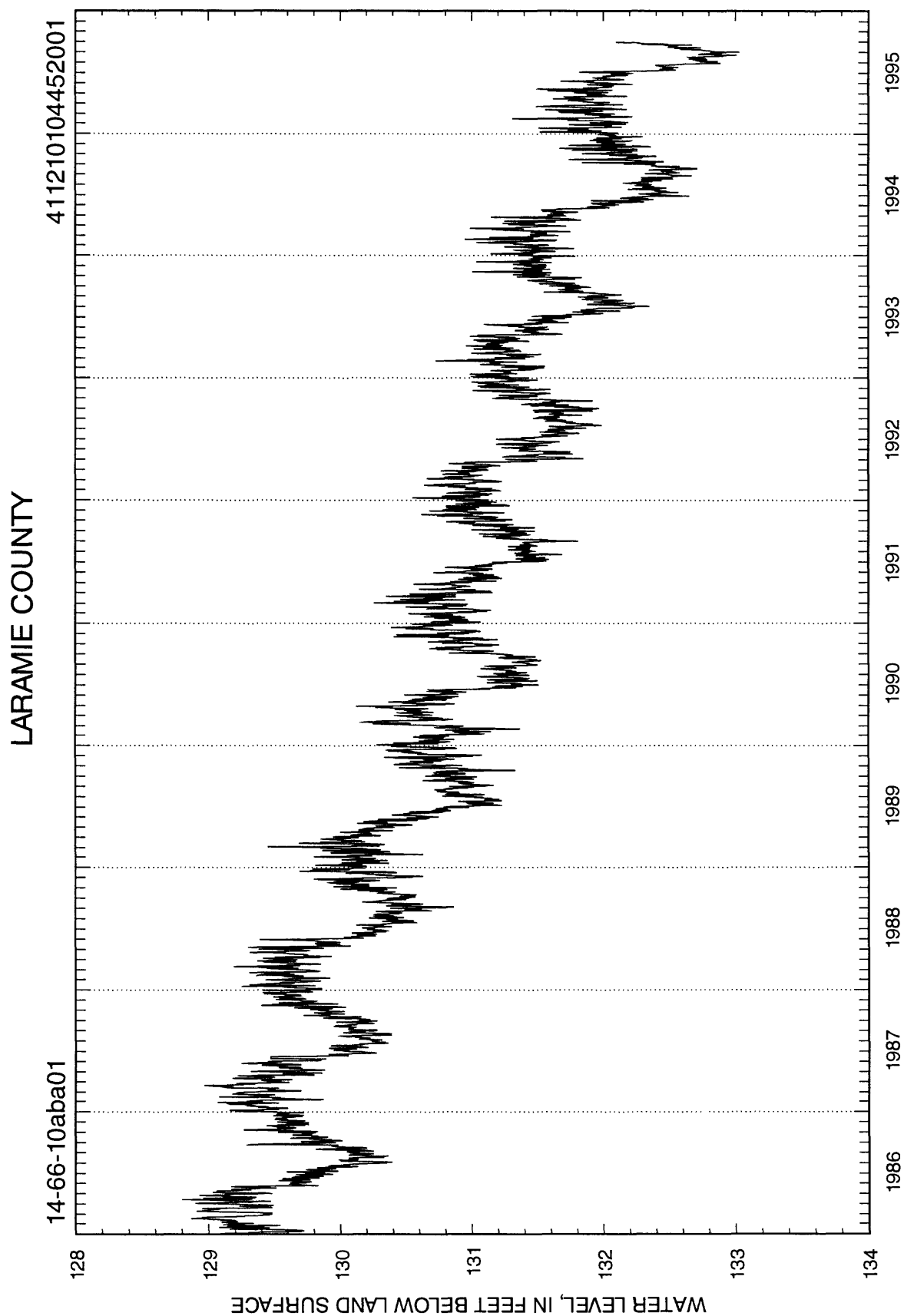
Laramie County #3



Laramie County #9

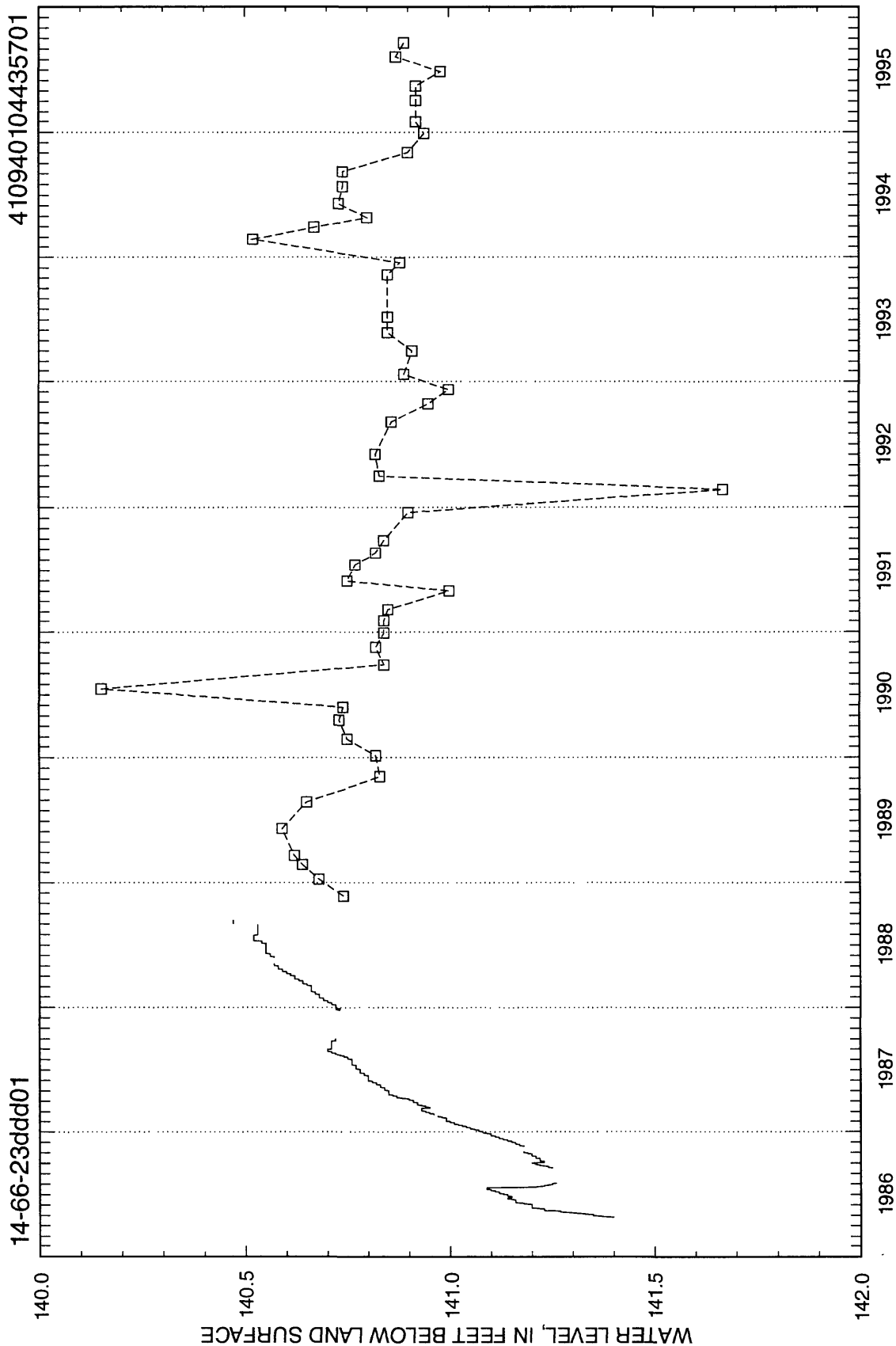
LARAMIE COUNTY



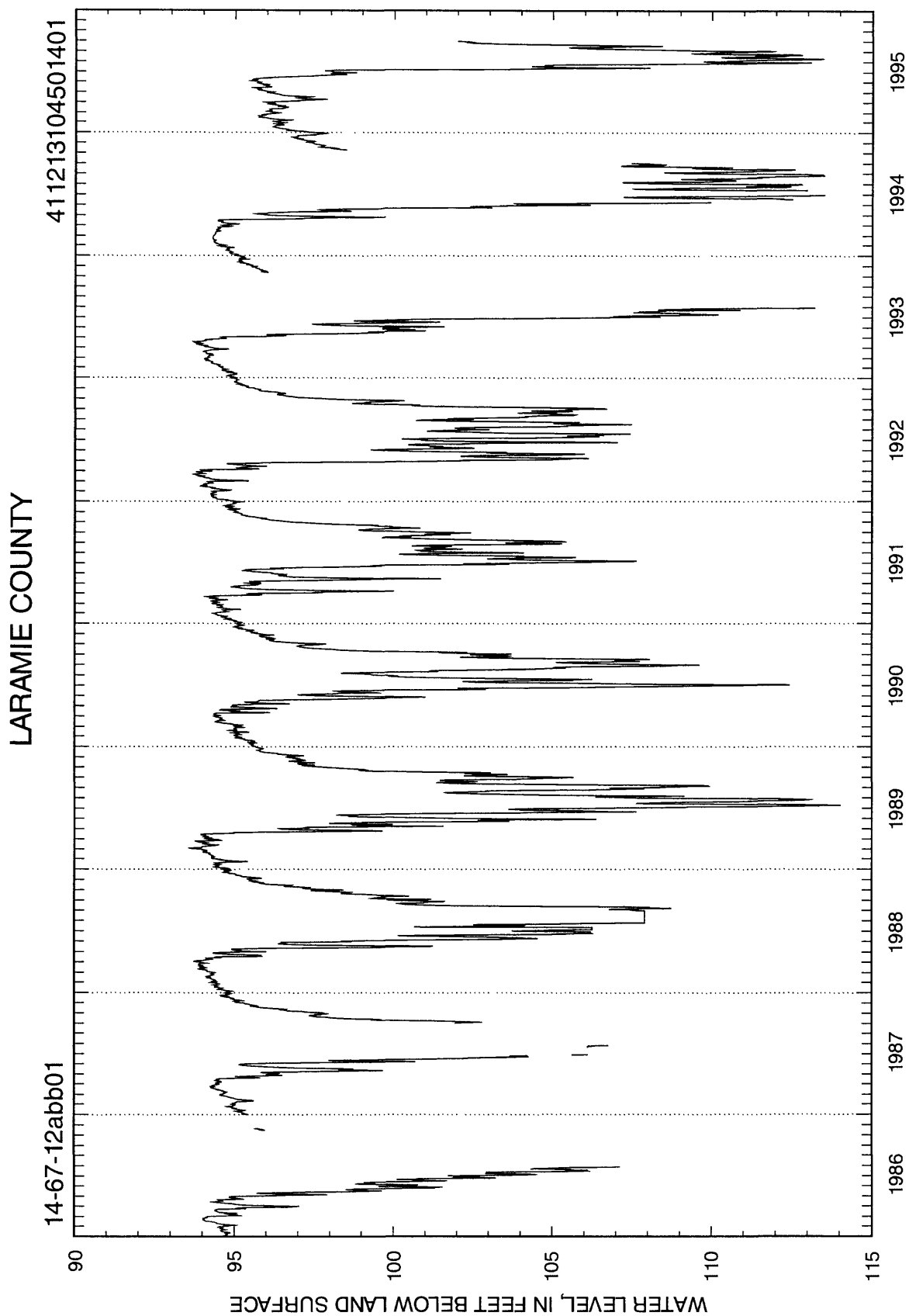


Laramie County #8

LARAMIE COUNTY

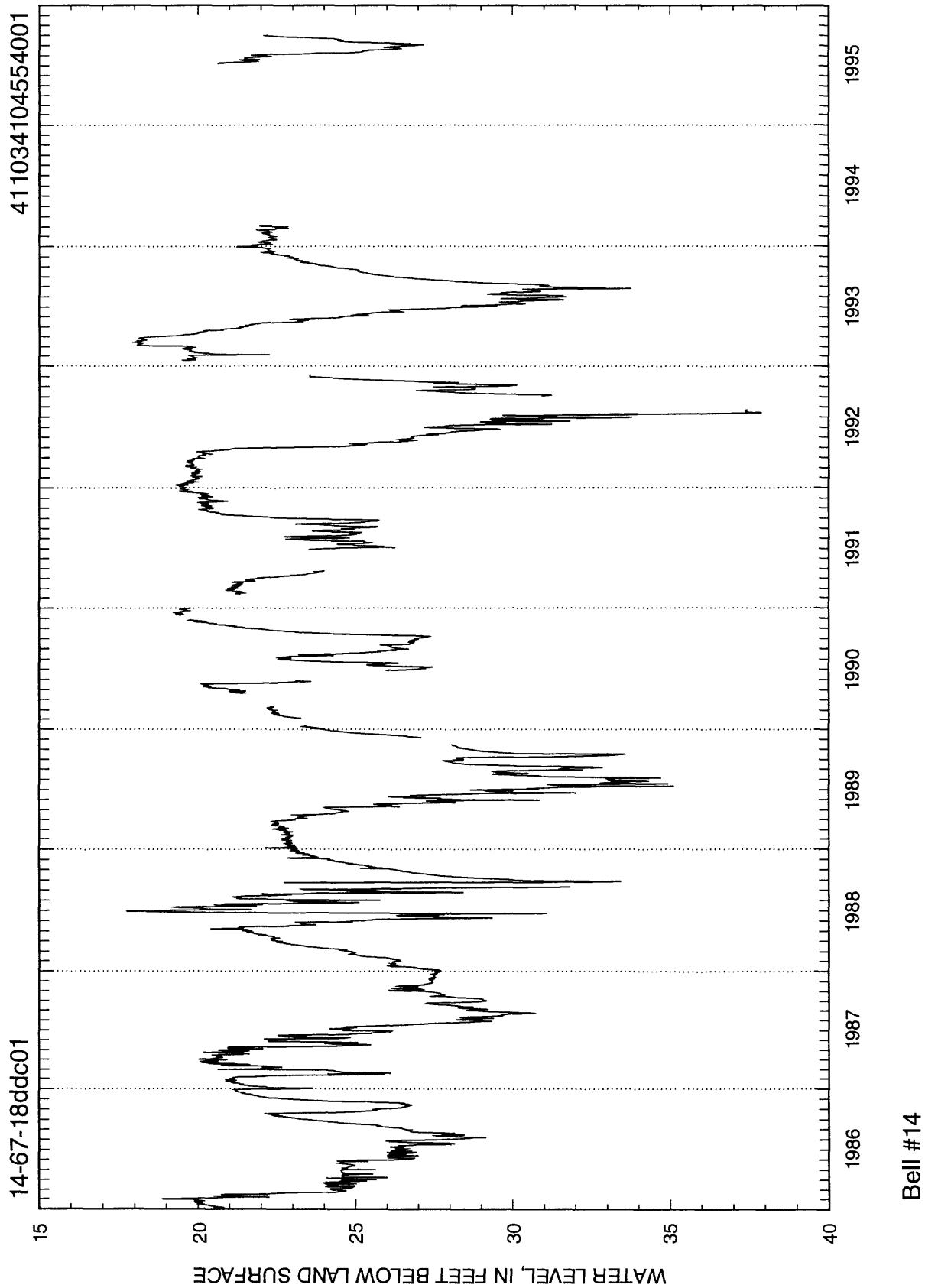


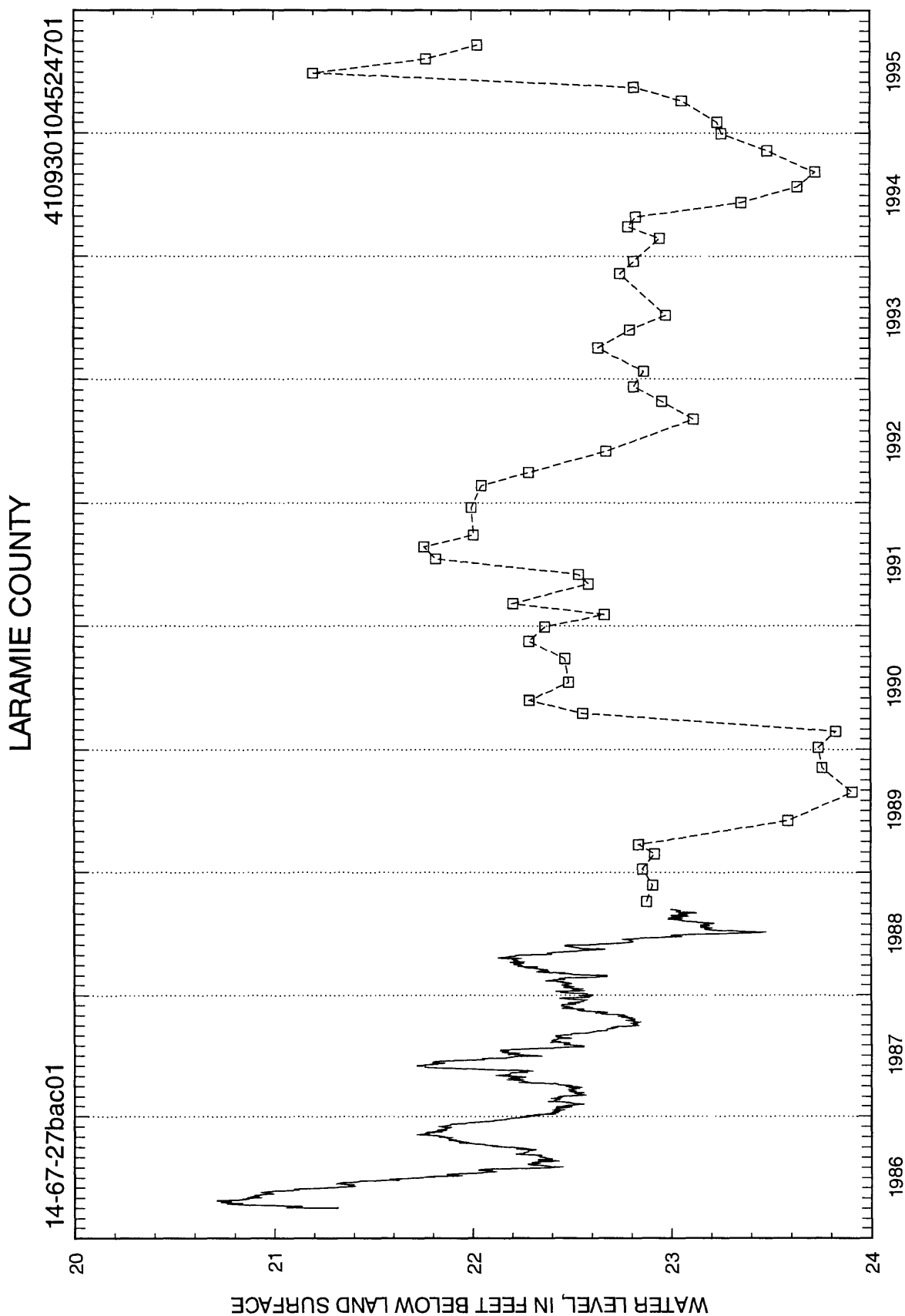
Laramie County #15



Laramie County #10

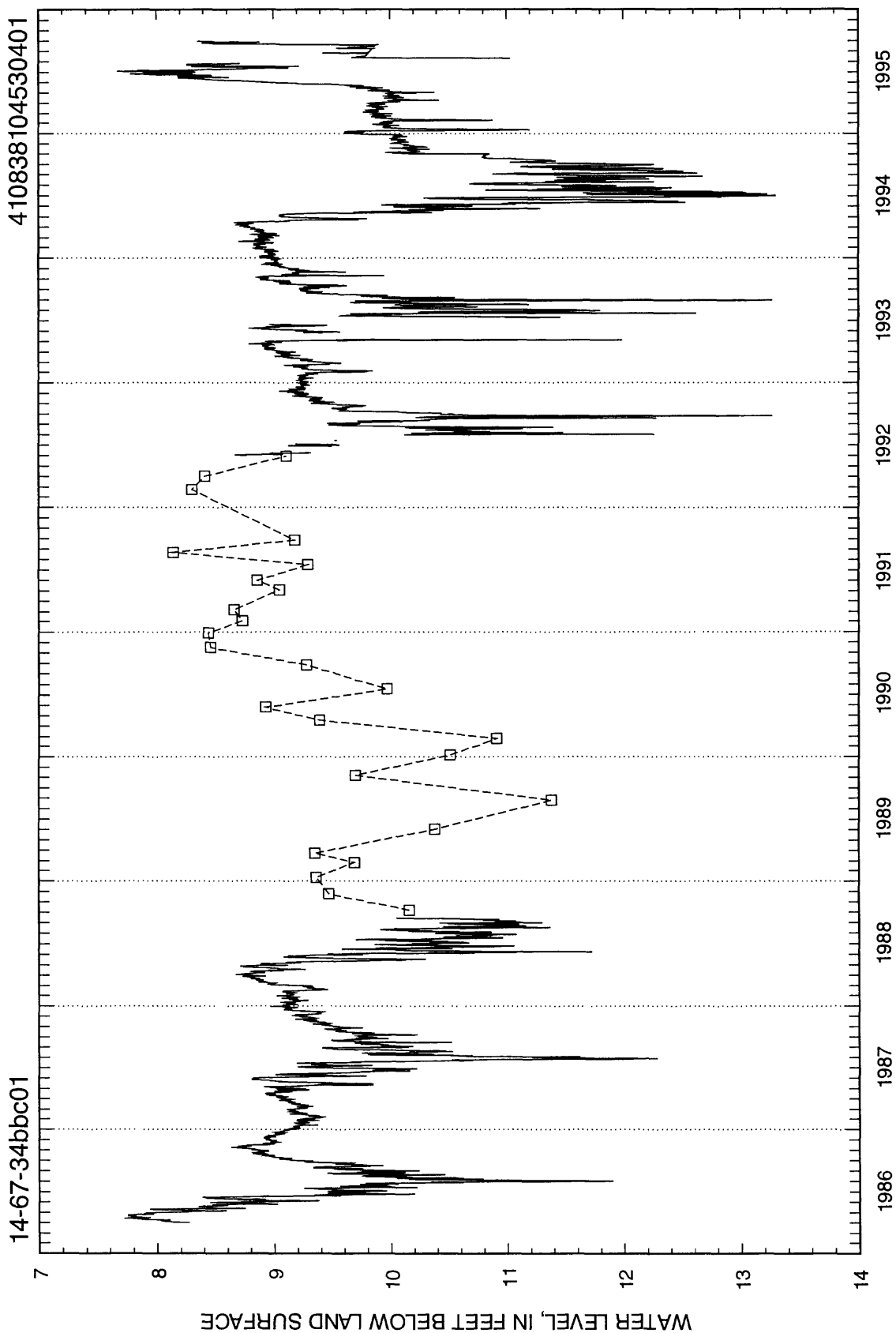
LARAMIE COUNTY



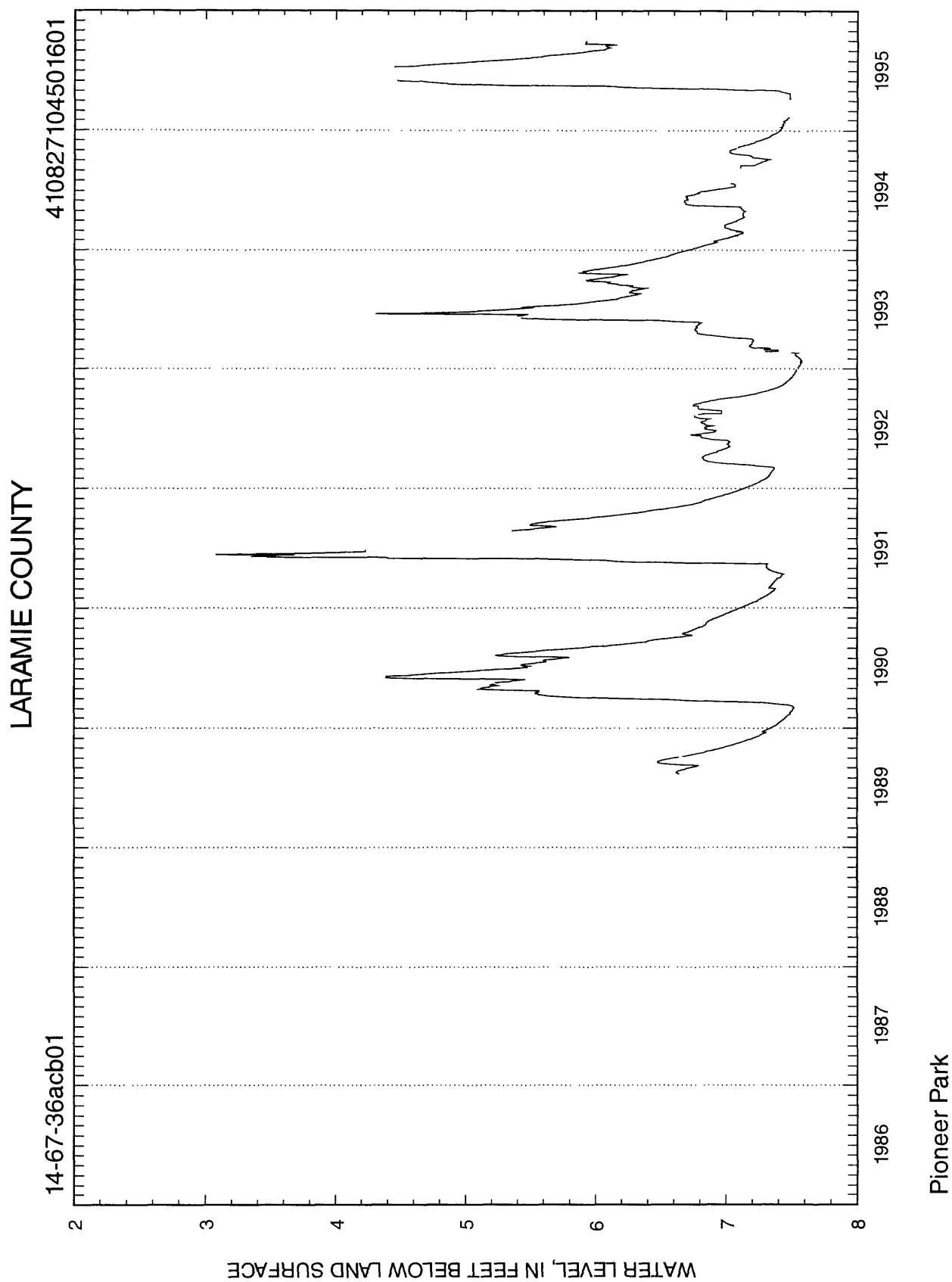


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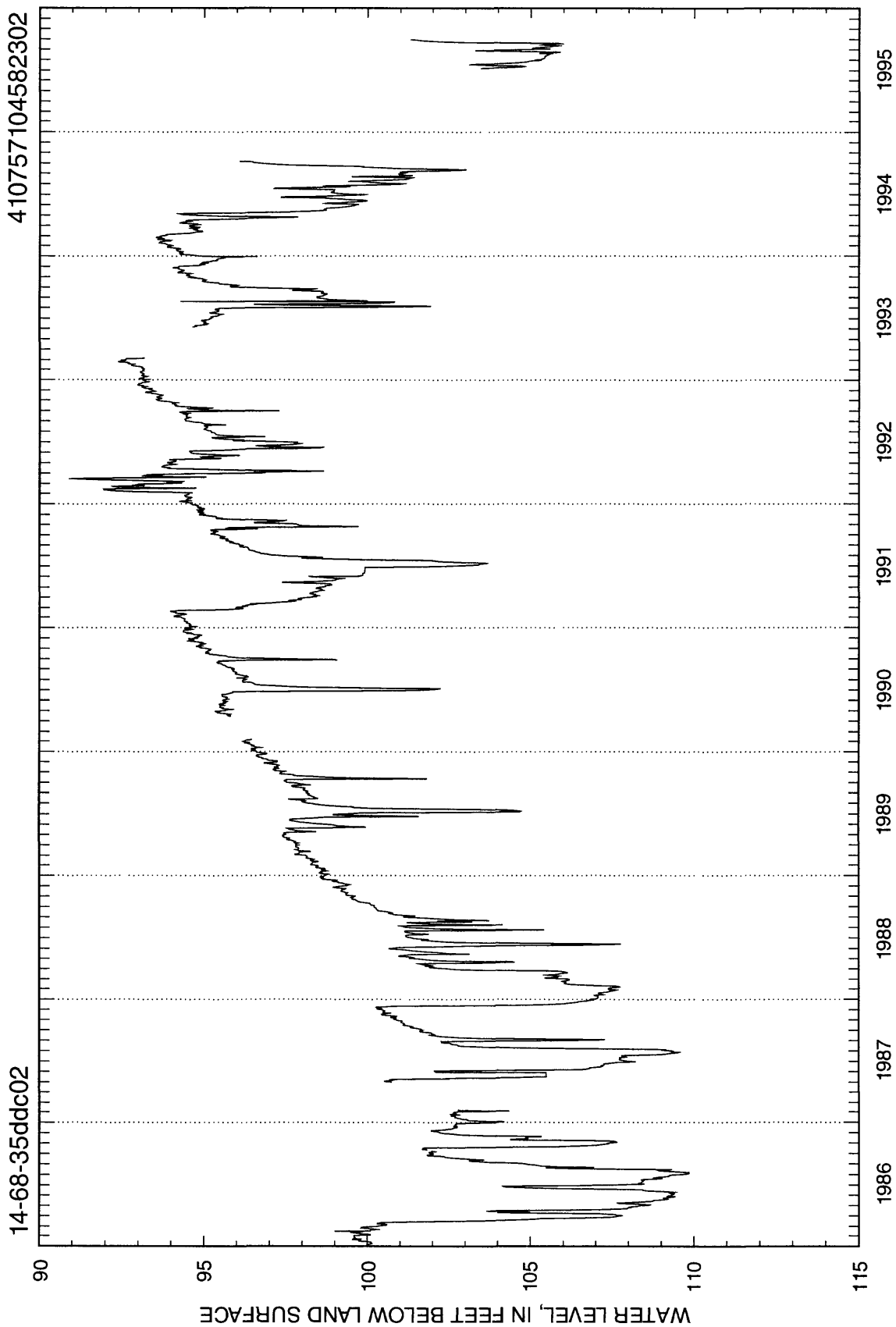
LARAMIE COUNTY



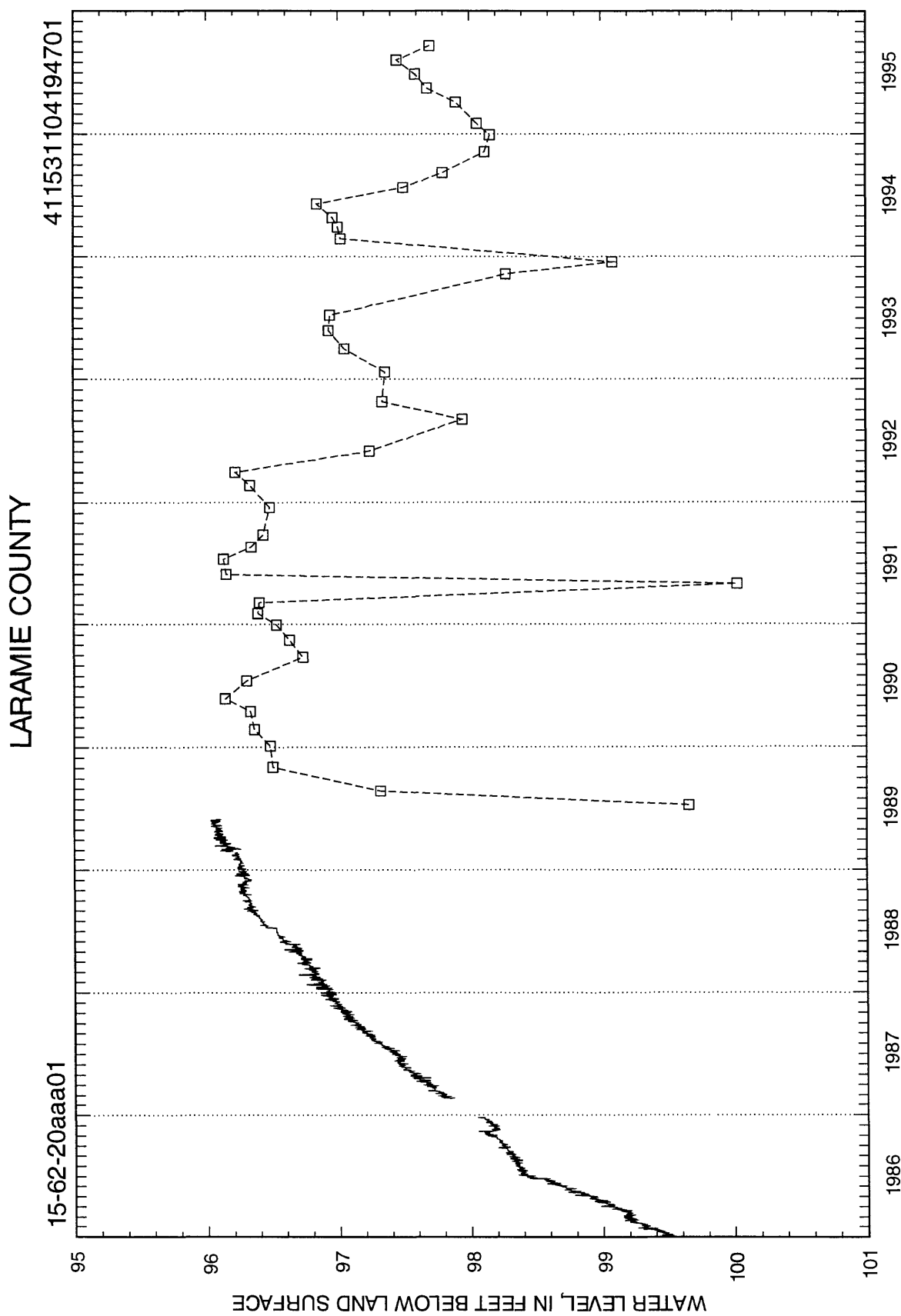
Laramie County #11



LARAMIE COUNTY

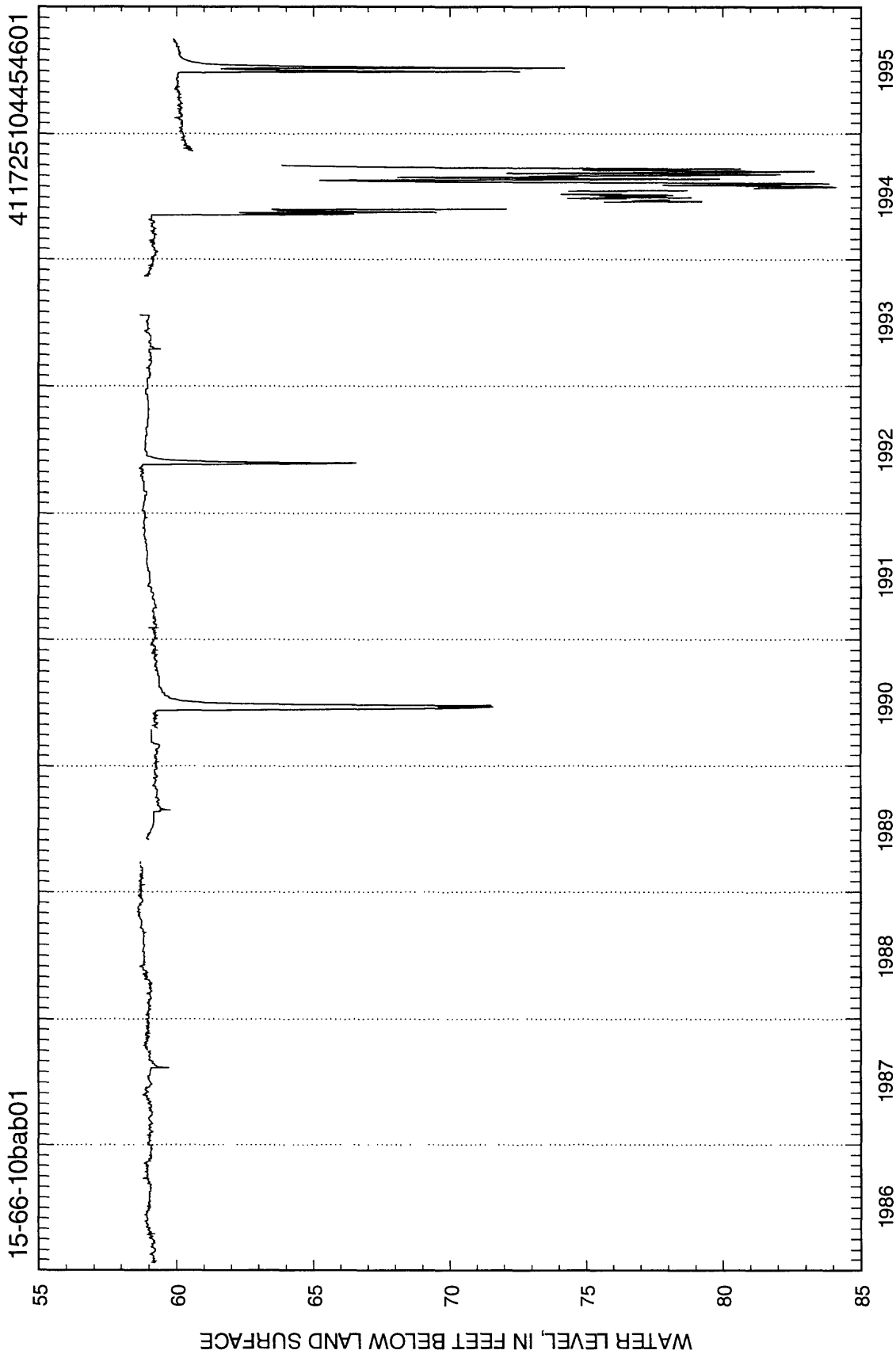


King #3

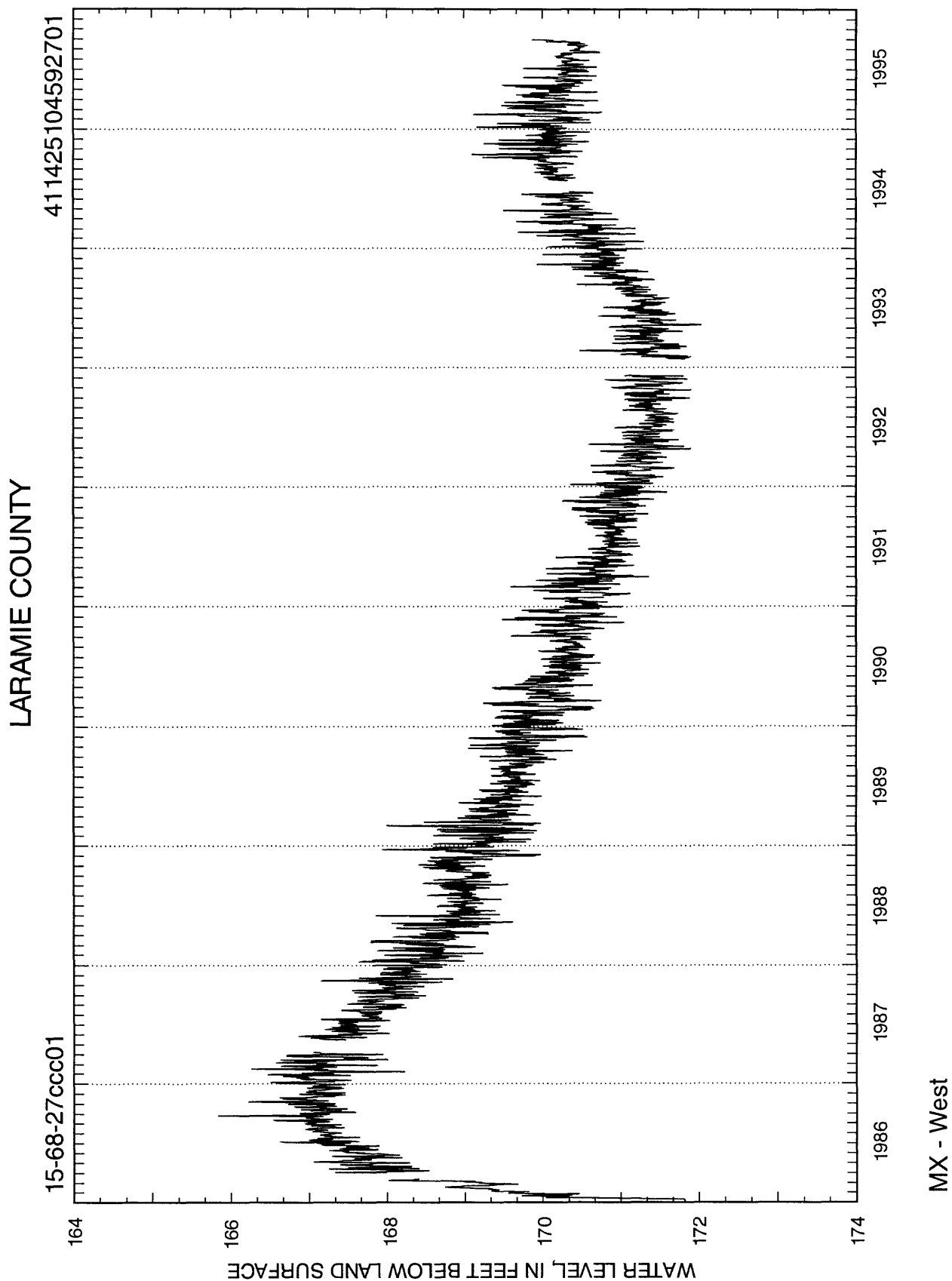


Laramie County #4

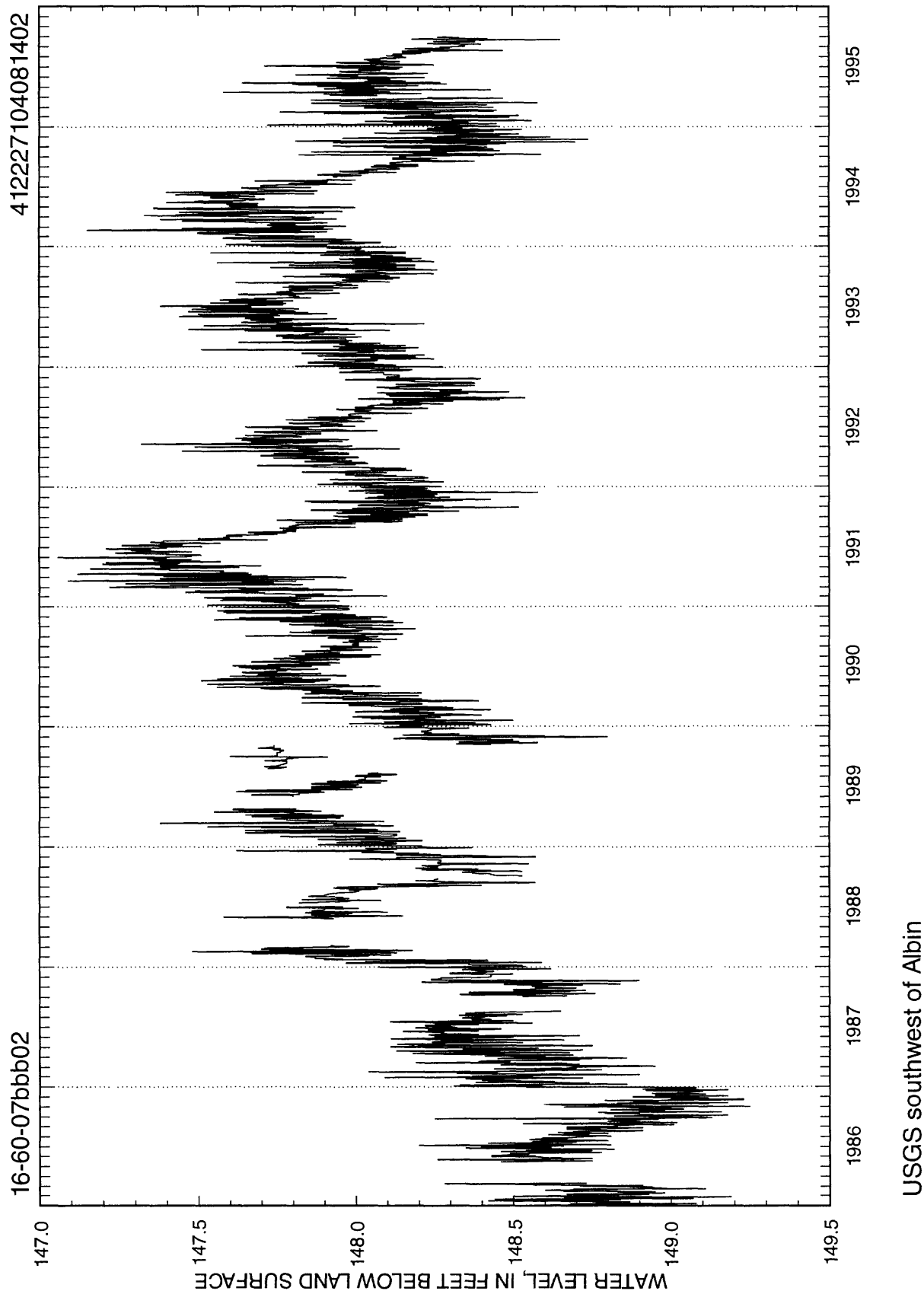
LARAMIE COUNTY

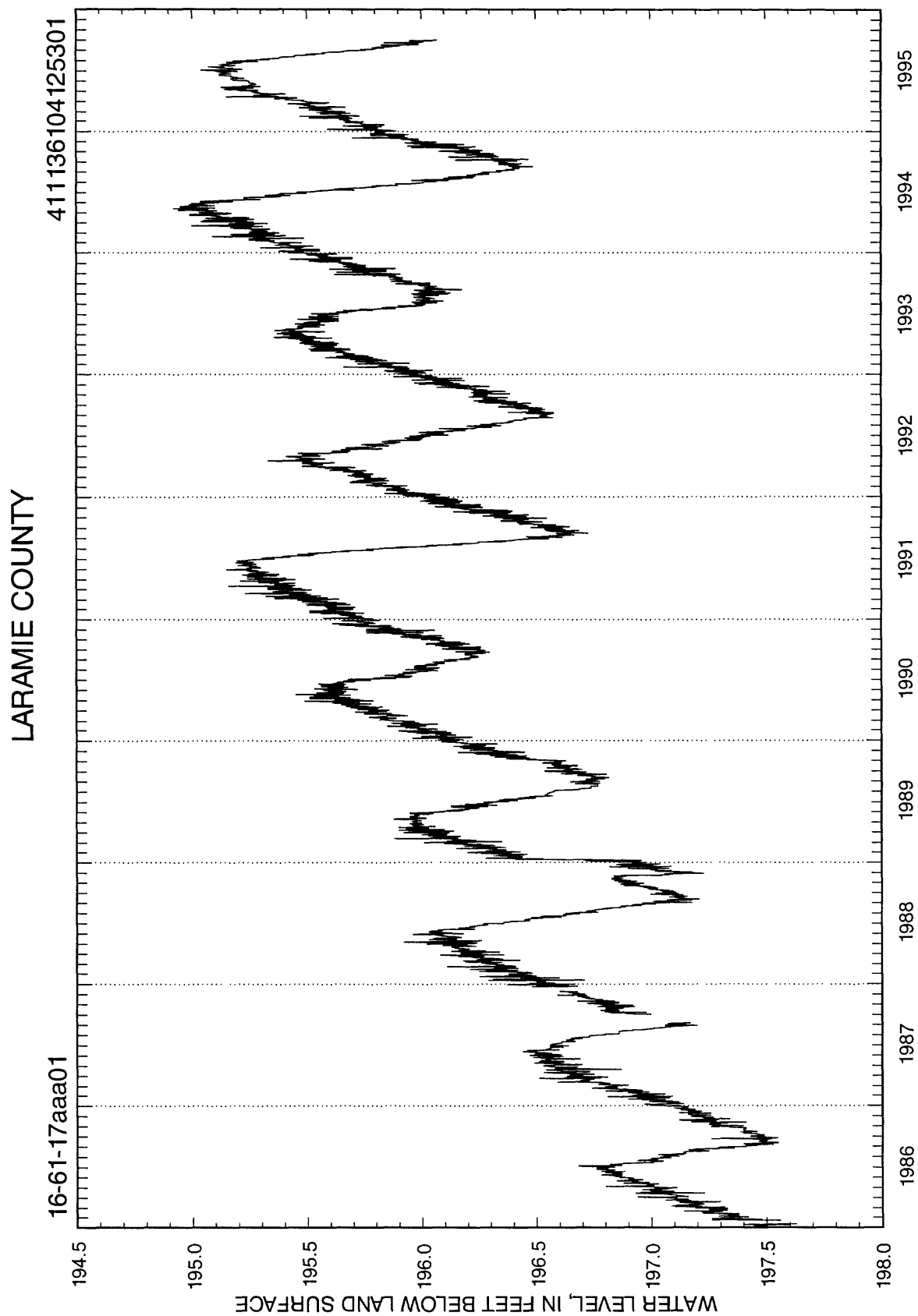


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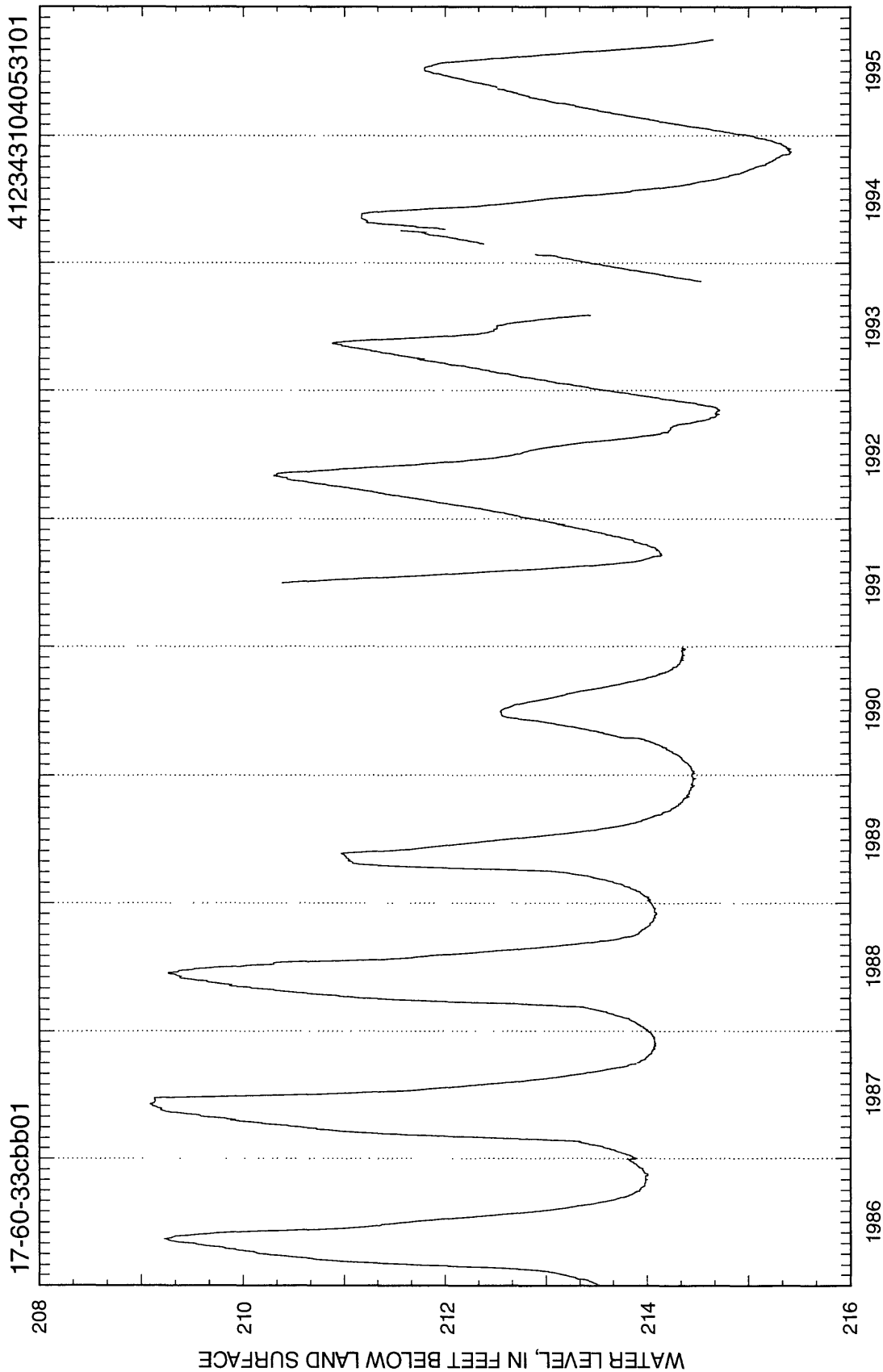


LARAMIE COUNTY

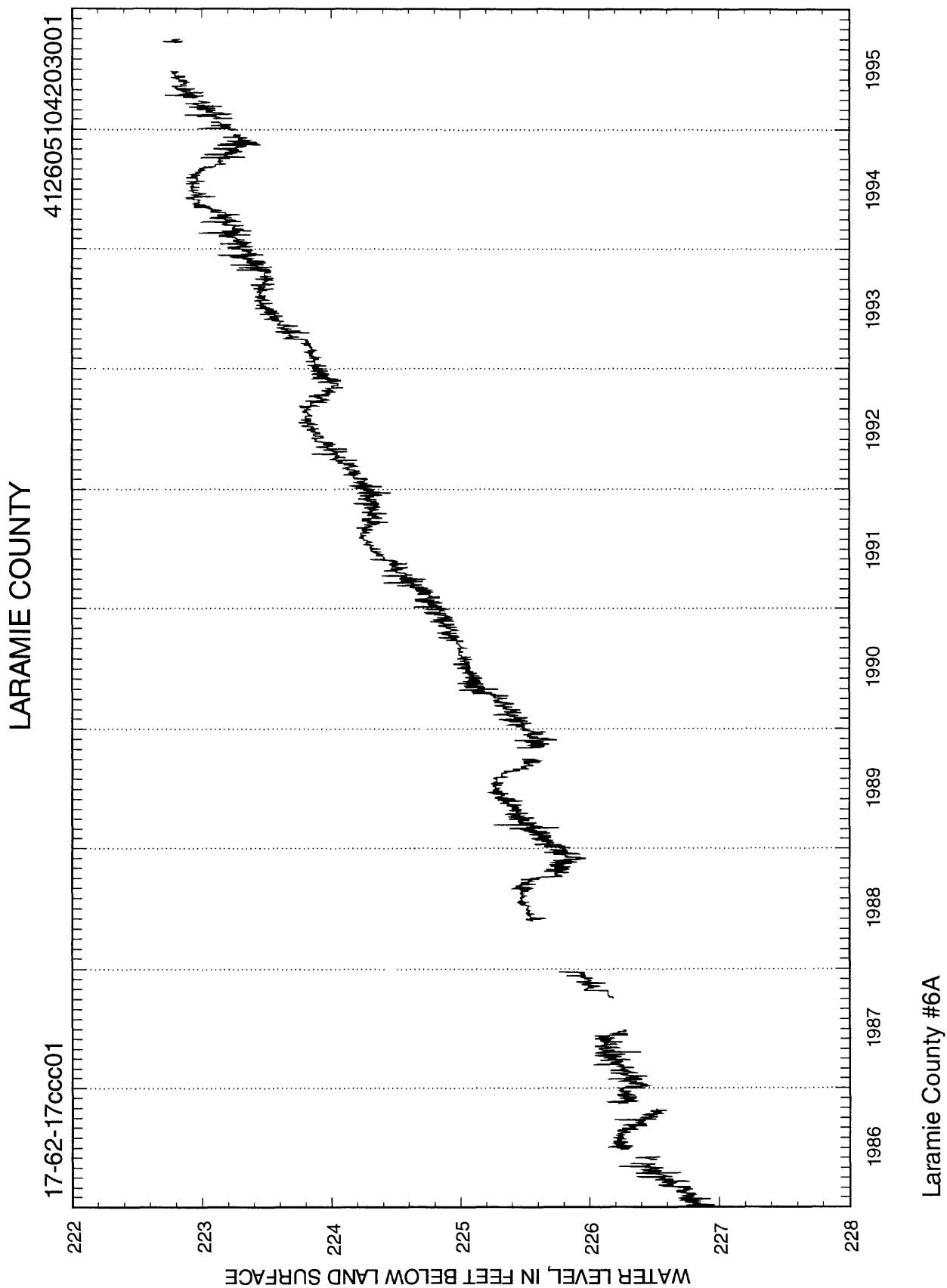




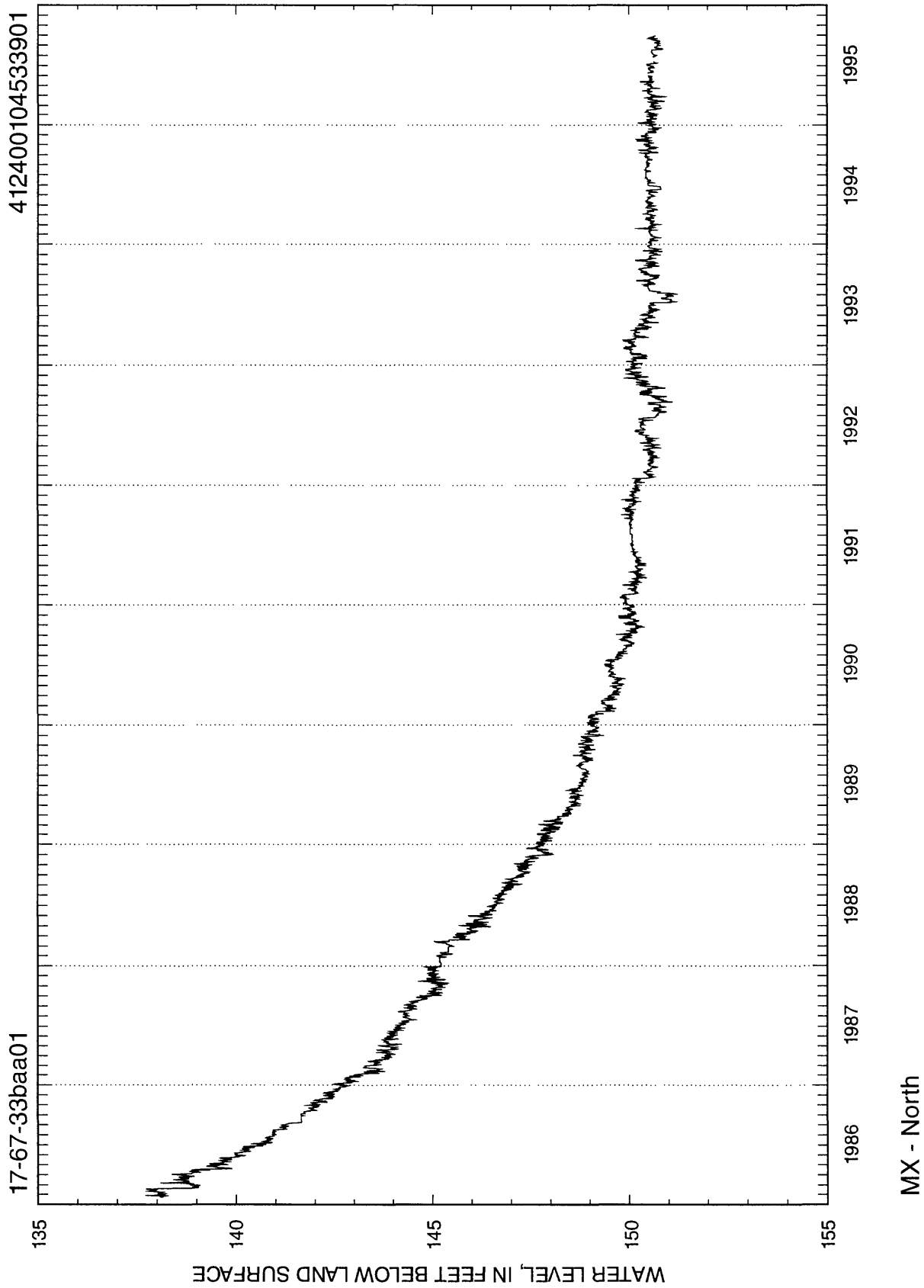
LARAMIE COUNTY



USGS south of Albin
Well flushed in March 1991 to improve connection between aquifer and well.



LARAMIE COUNTY



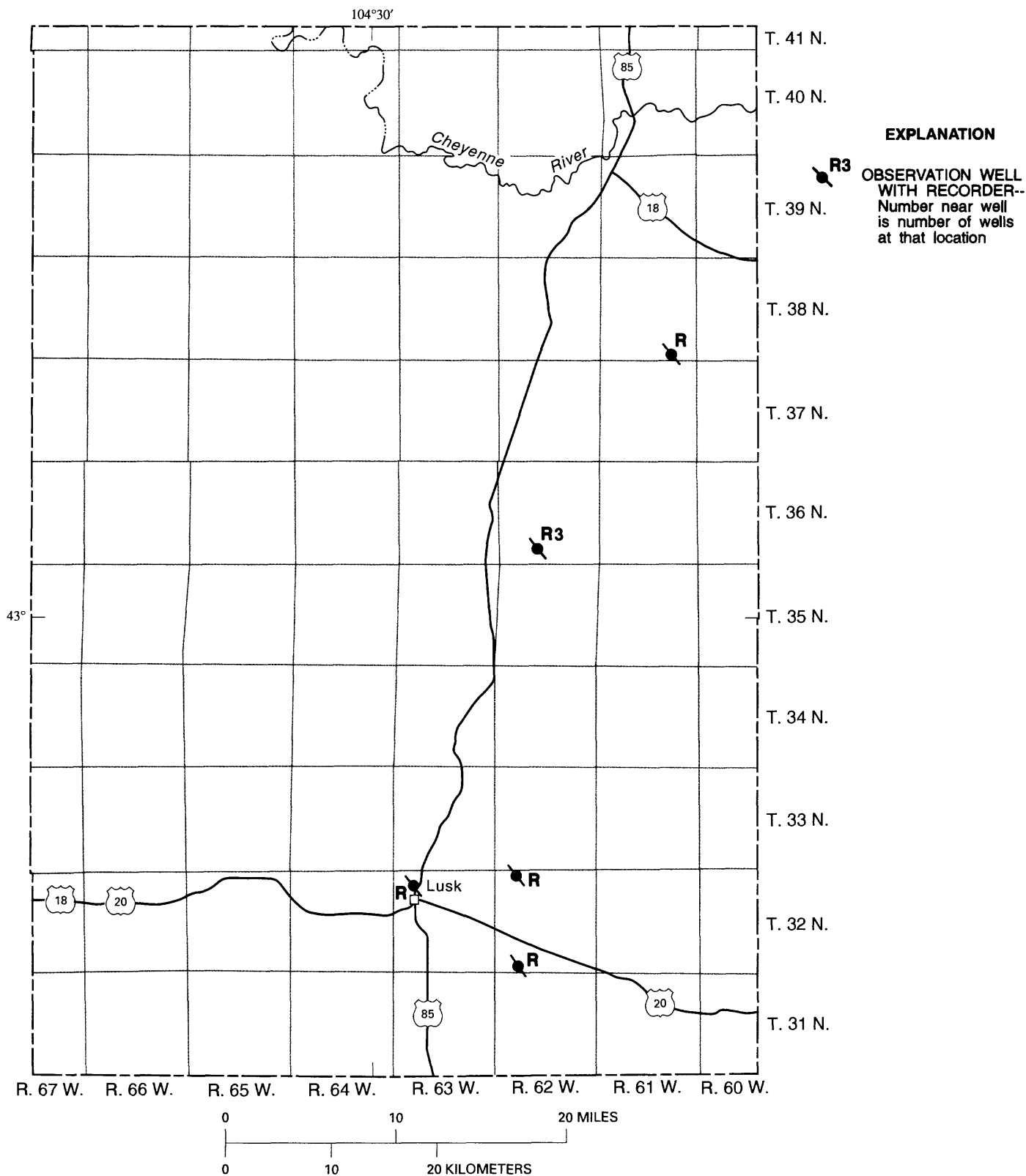
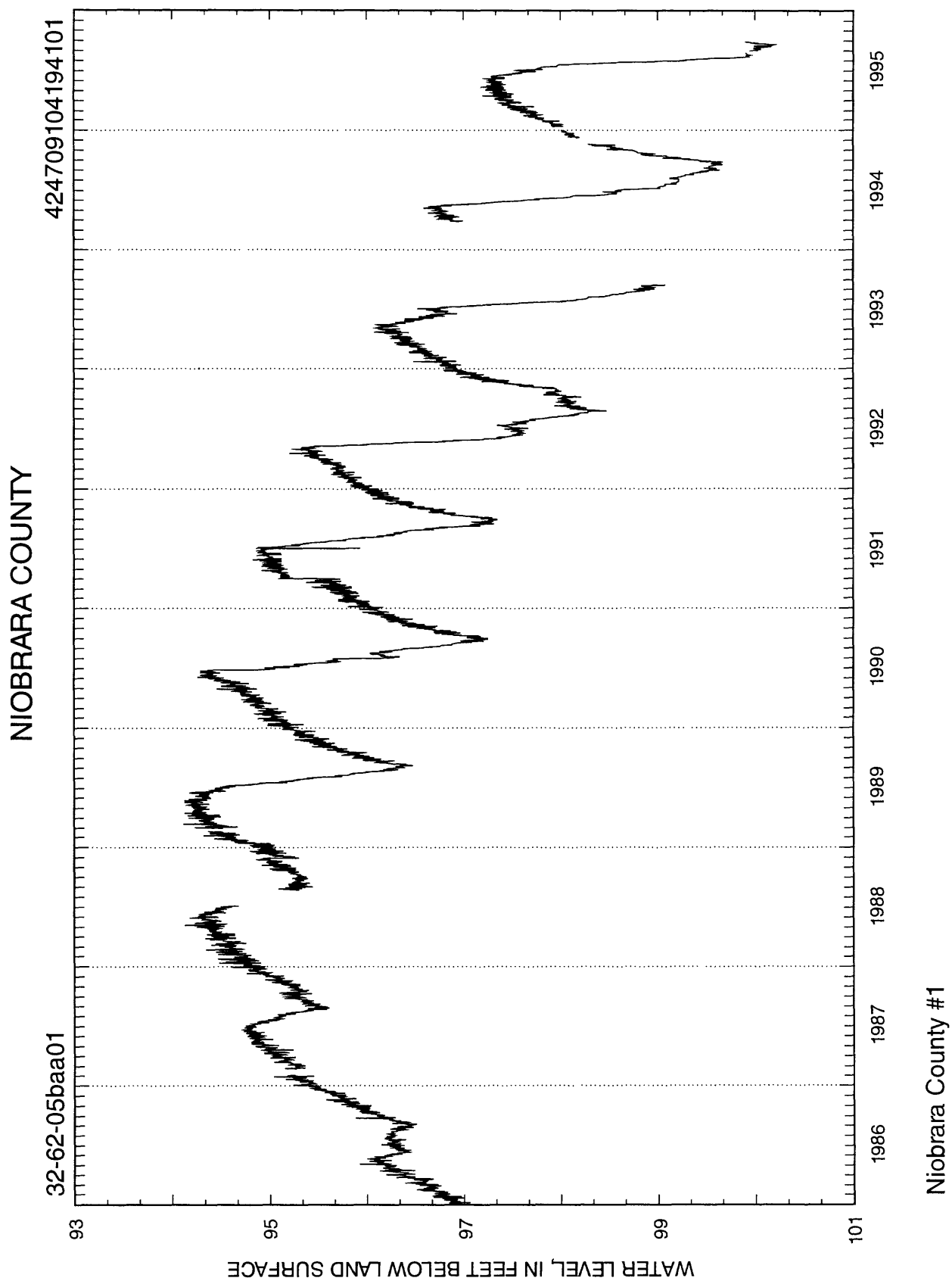


Figure 14. Location of observation wells in Niobrara County, Wyoming.

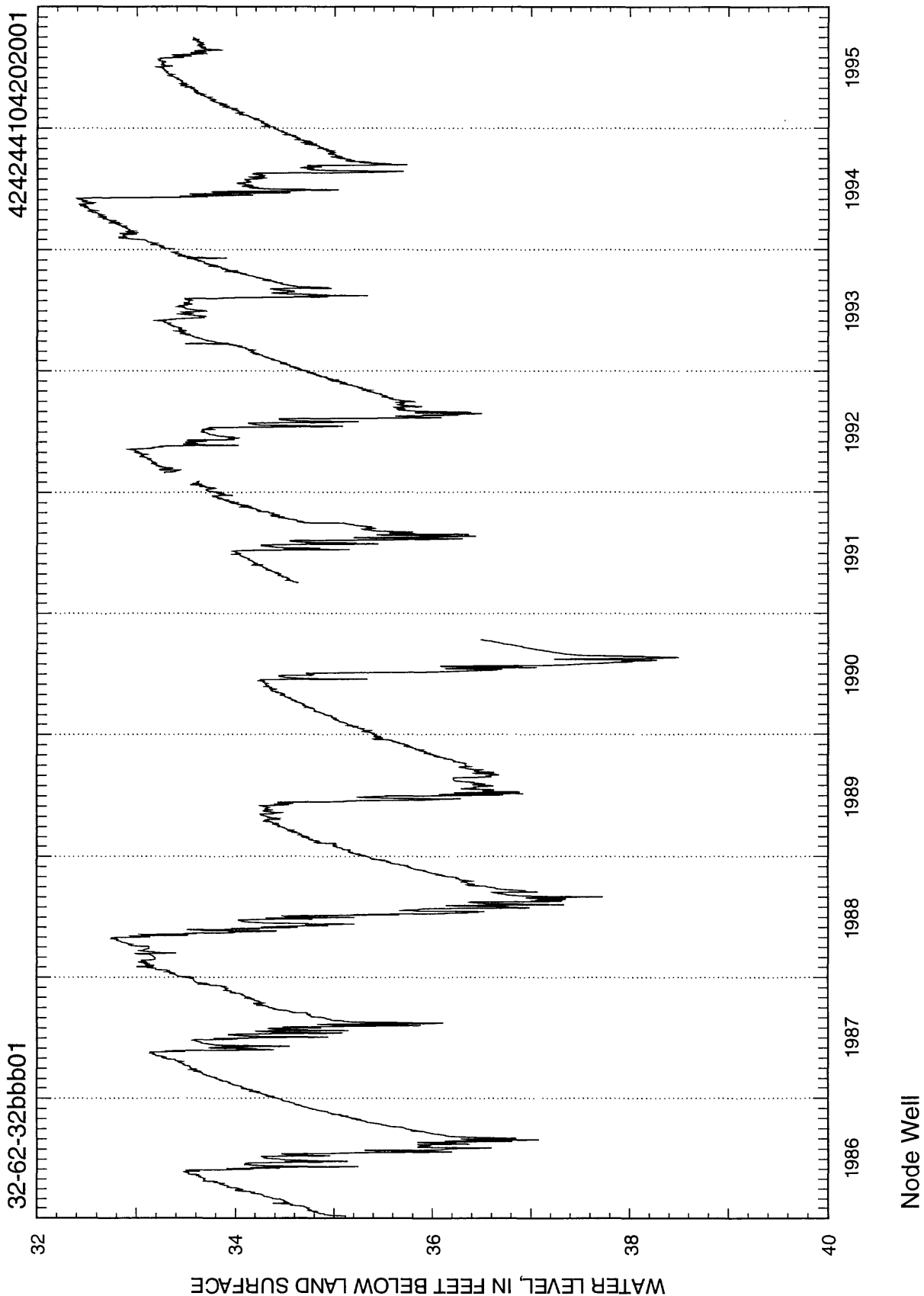
Records of observation wells in Niobrara County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

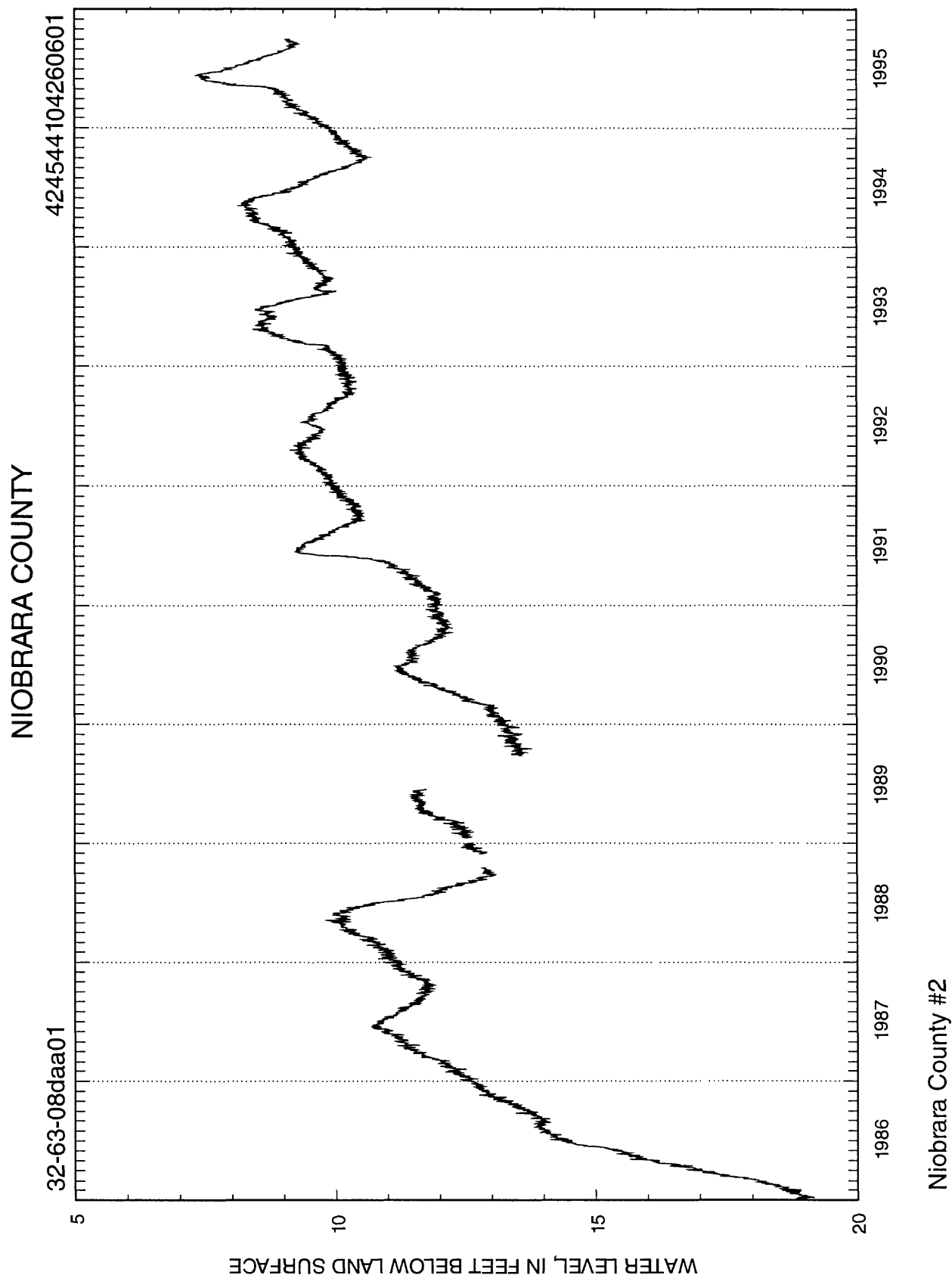
Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
32-62-05baa01	177	U	122ARKR	1979-95	92.26	06-80	100.20	09-95
32-62-32bbb01	485	U	122ARKR	1970-95	20.93	06-70	38.48	08-90
32-63-08daa01	178	U	122ARKR	1979-95	7.35	06-95	48.96	09-82
36-62-28ab 01	3,269	U	331MDSN	1974-95	¹ 549.00	05-74	558.54	09-85
36-62-28ab 02	505	U	217LKOT	1974-95	¹ 233.87	08-74	256.64	10-94
36-62-28bbd01	1,513	U	317MNLS	1980-95	549.75	09-95	554.67	09-89
38-61-35dca01	5,155	U	331MDSN	1983-93	700.62	09-93	716.05	10-83

¹From hand-measured data.

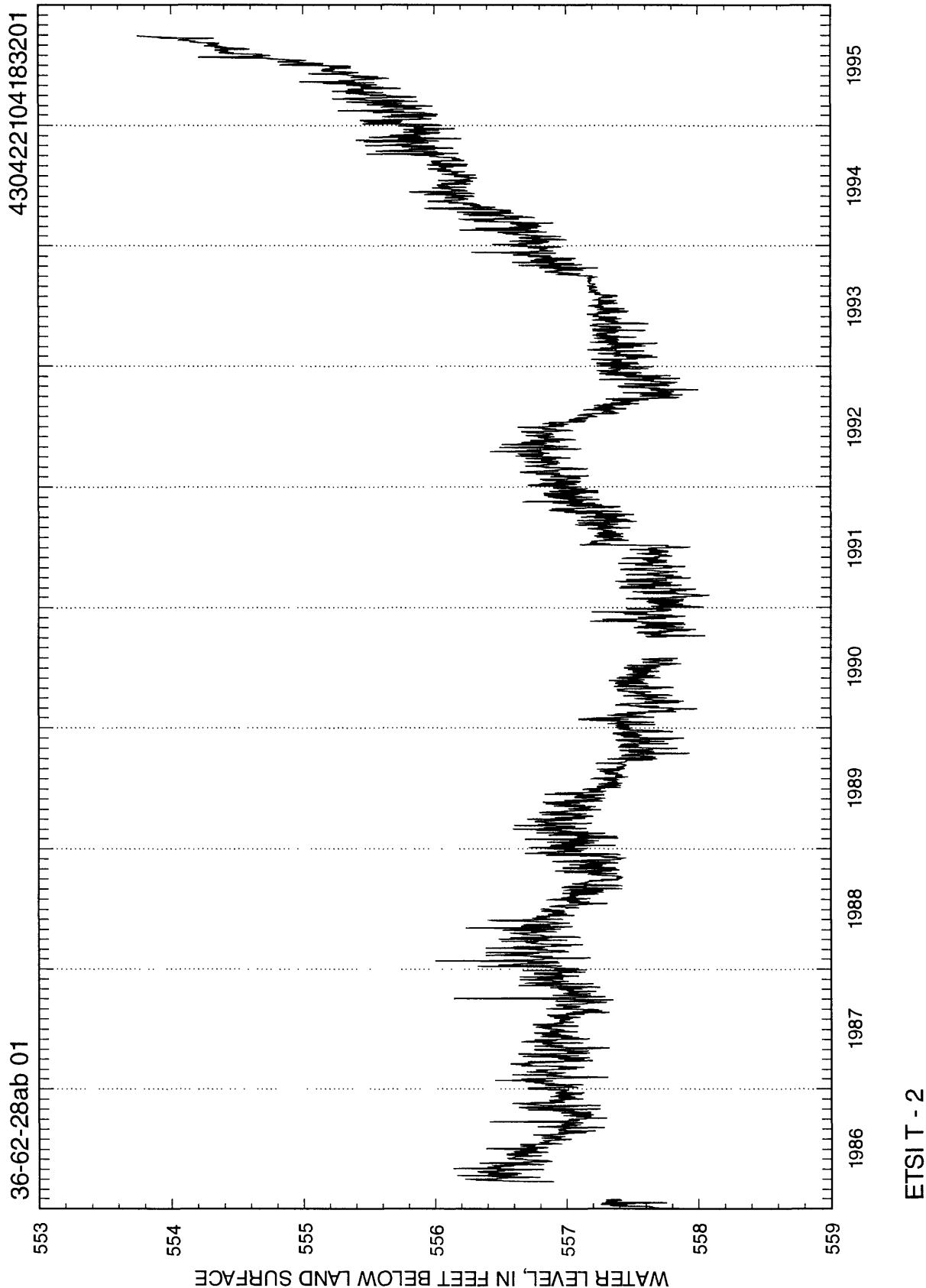


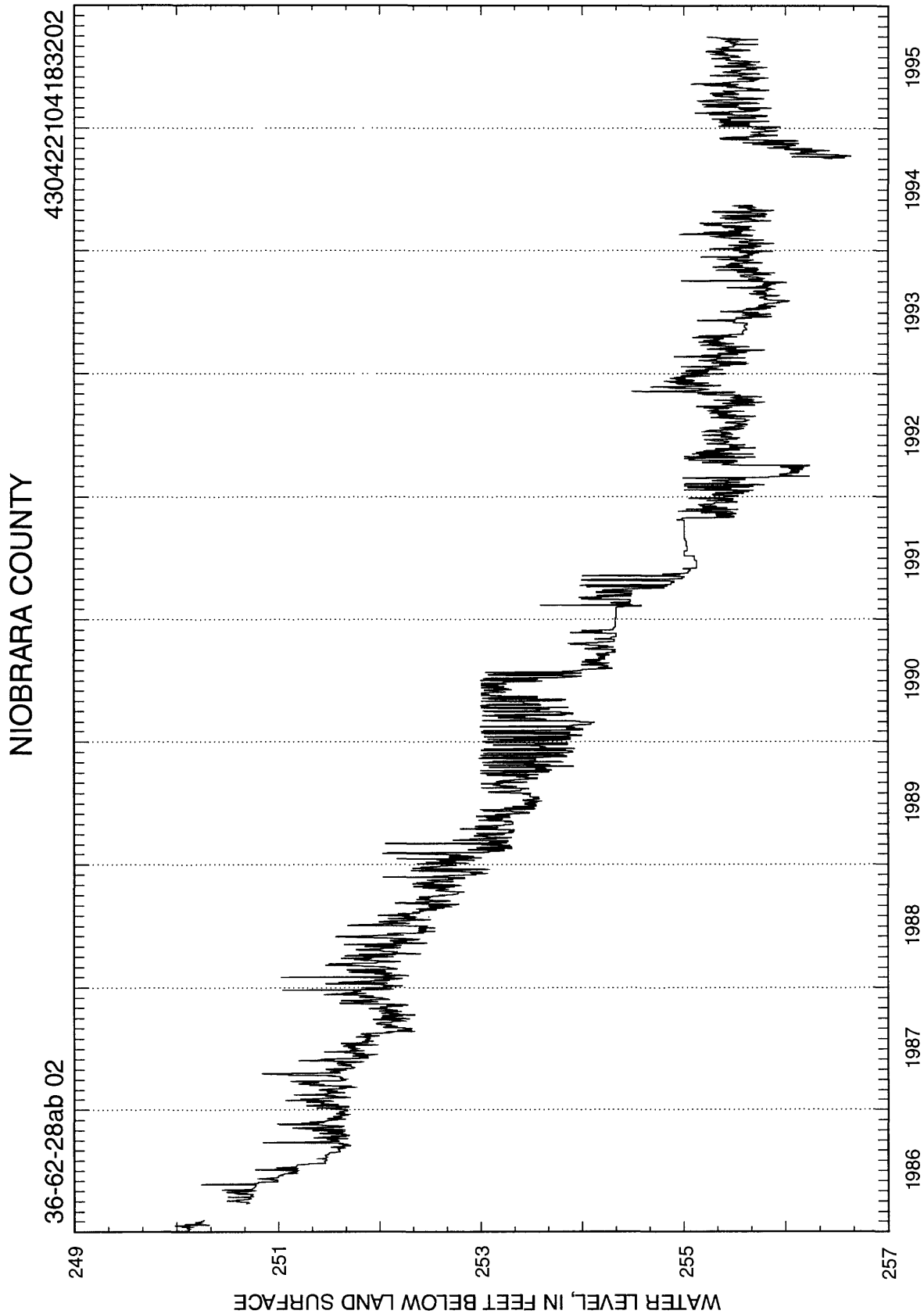
NIOBRARA COUNTY





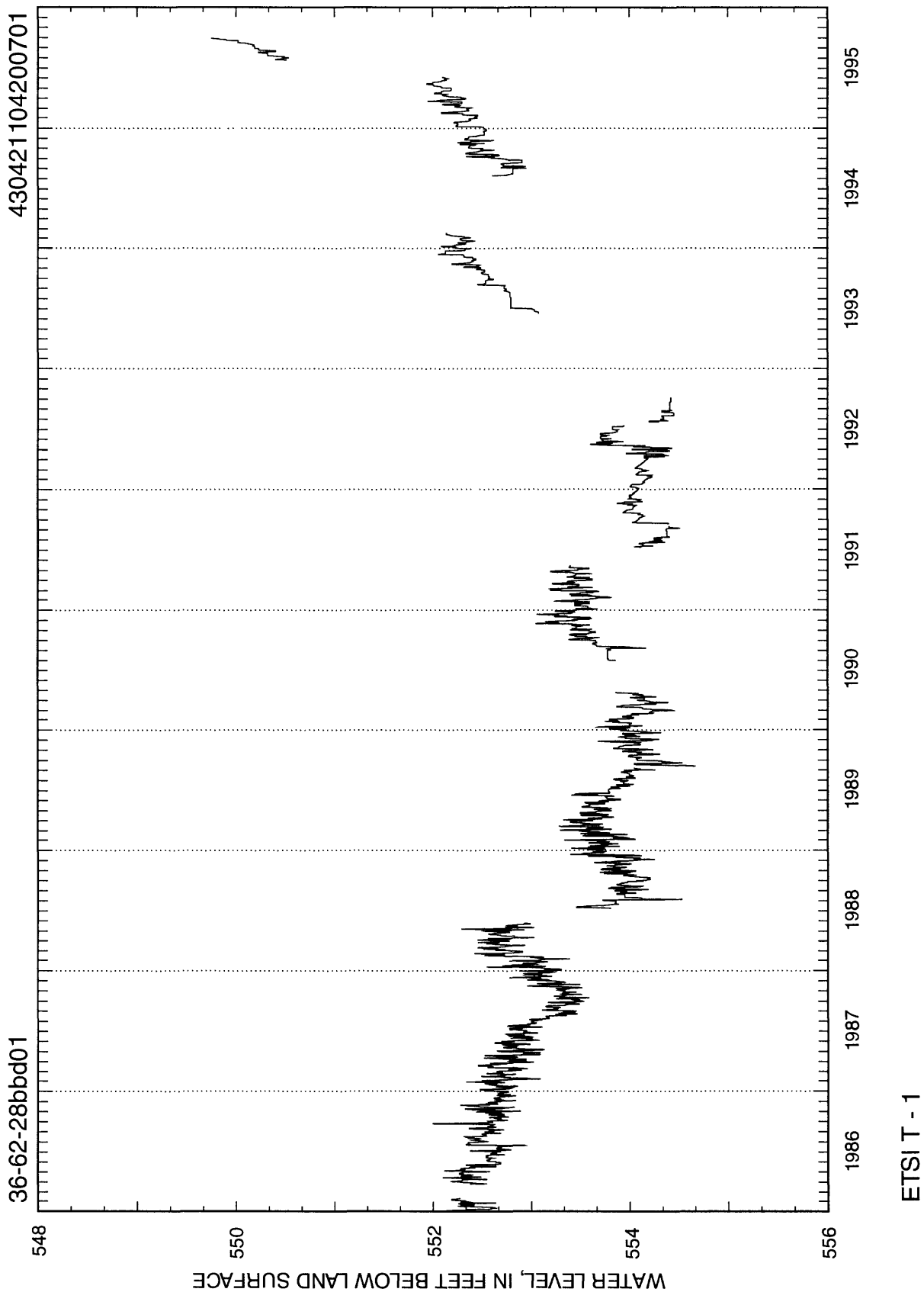
NIOBRARA COUNTY



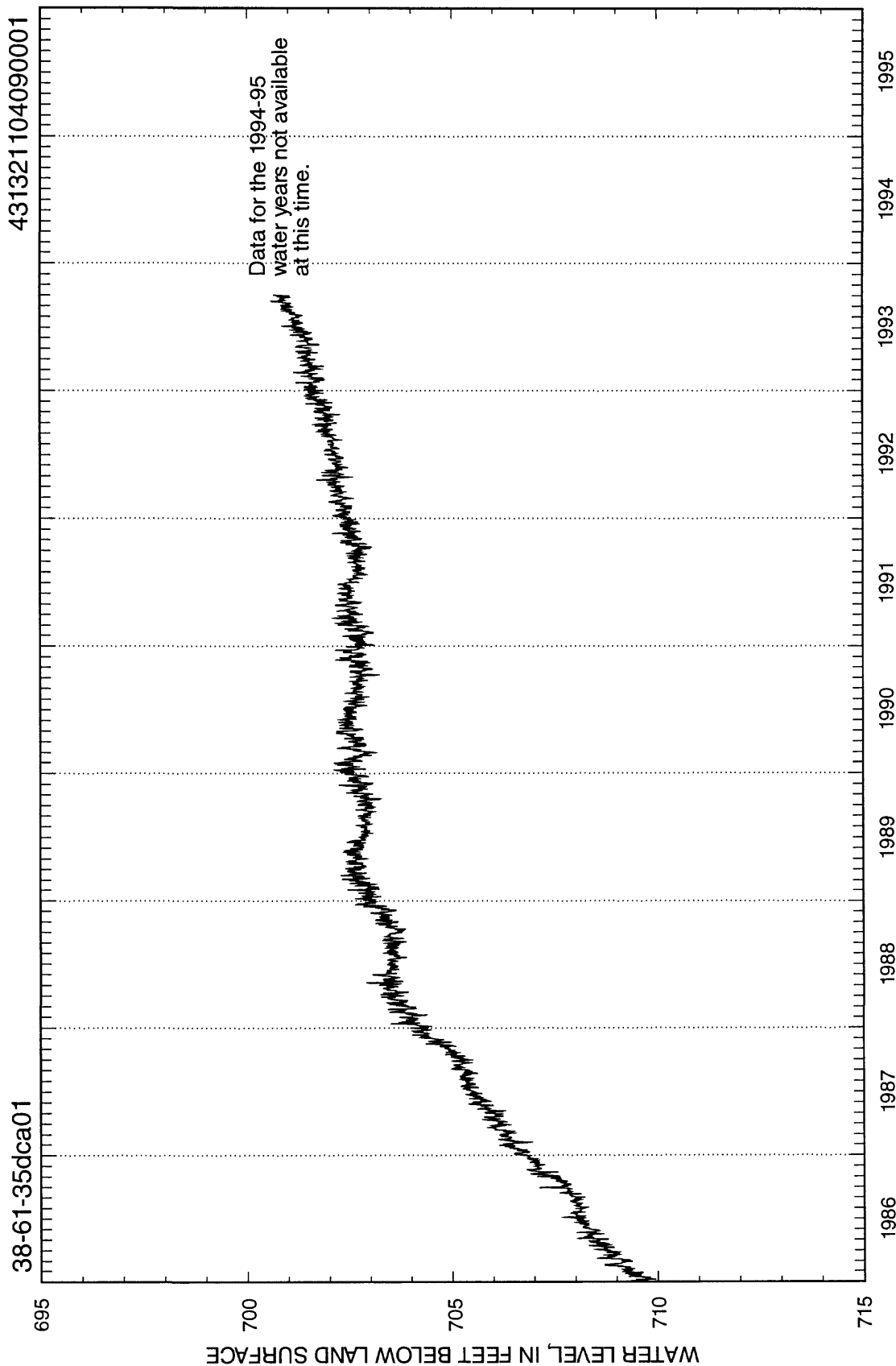


ETSI O - 2

NIOBRARA COUNTY



NIOBRARA COUNTY



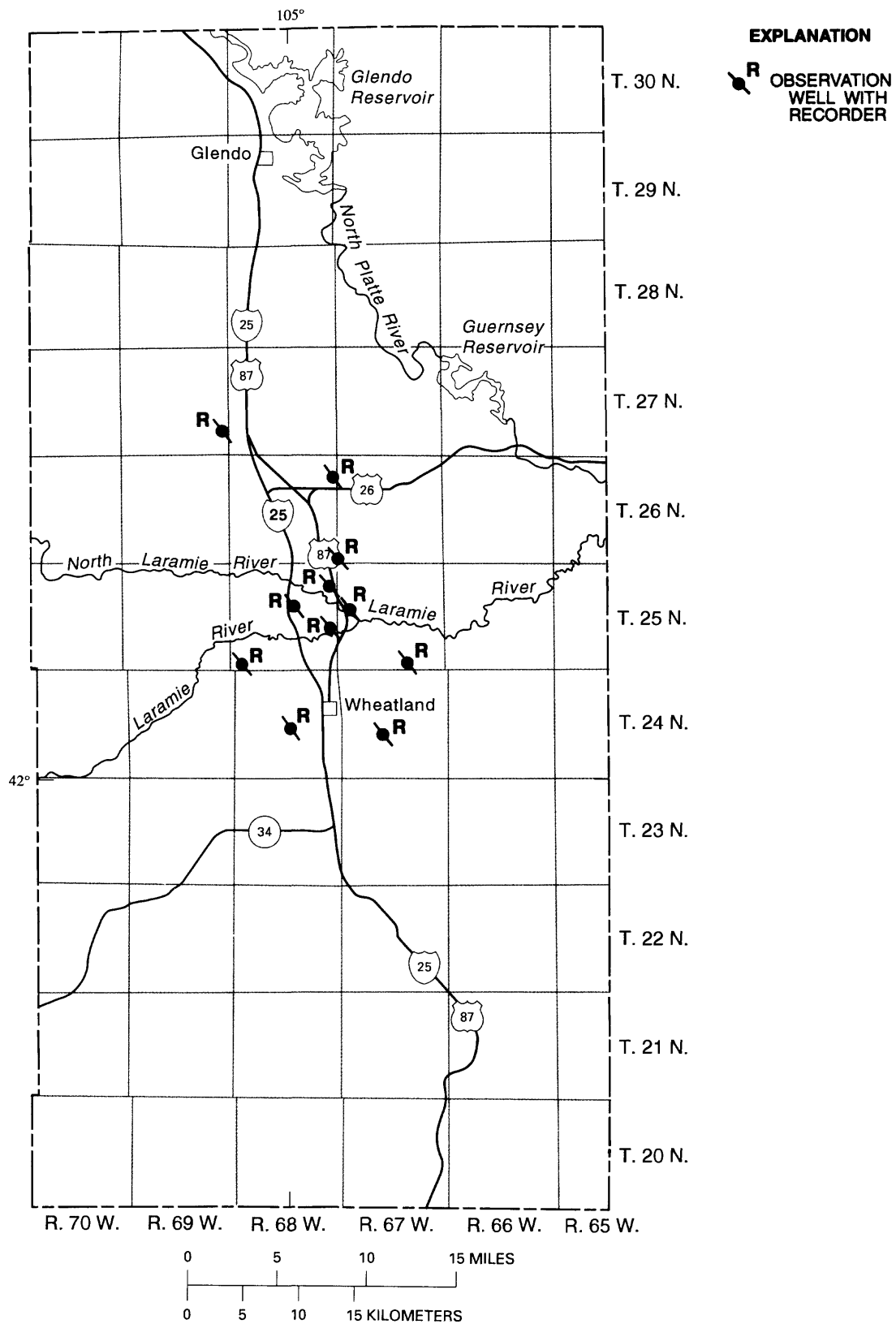


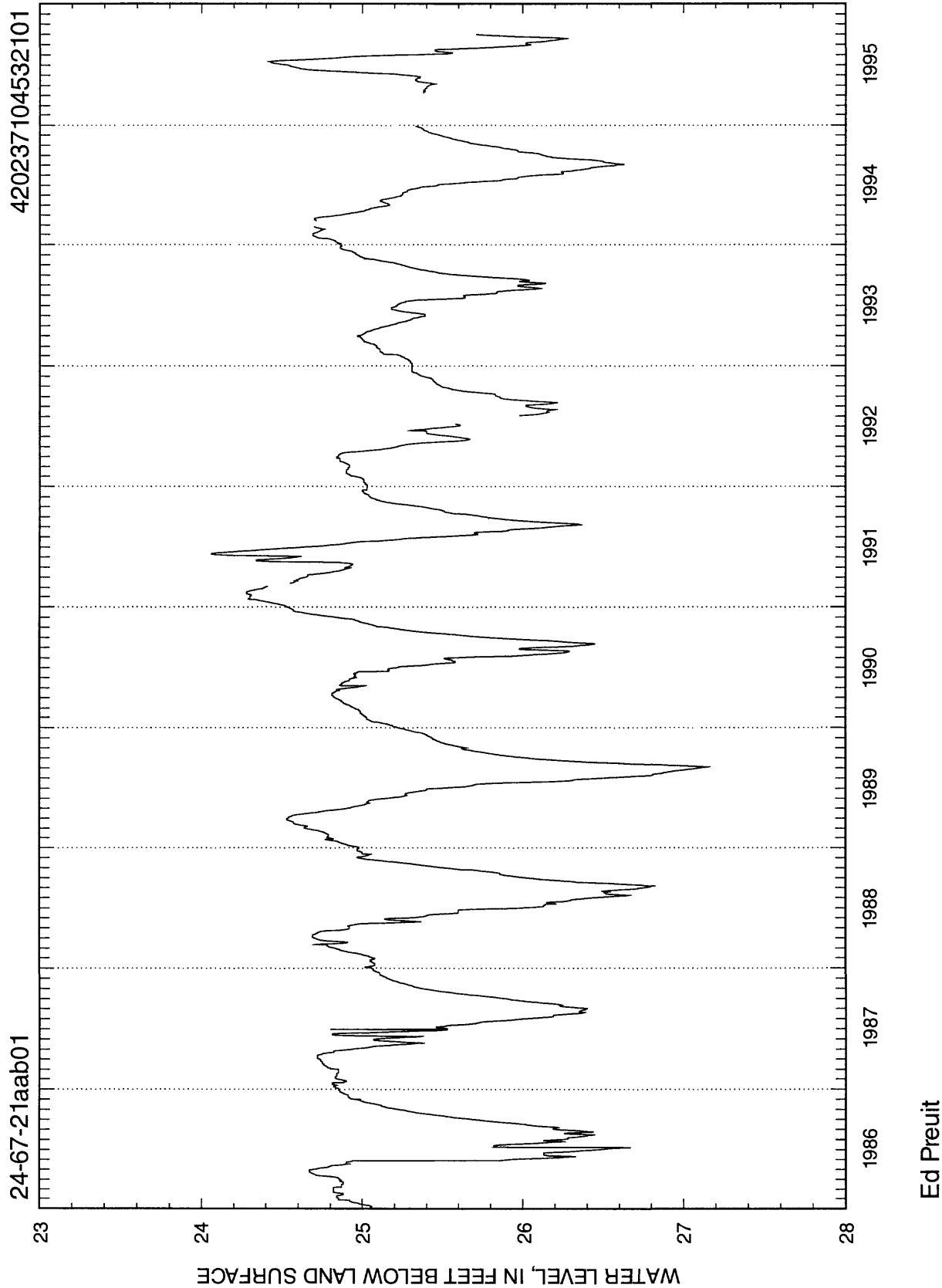
Figure 15. Location of observation wells in Platte County, Wyoming.

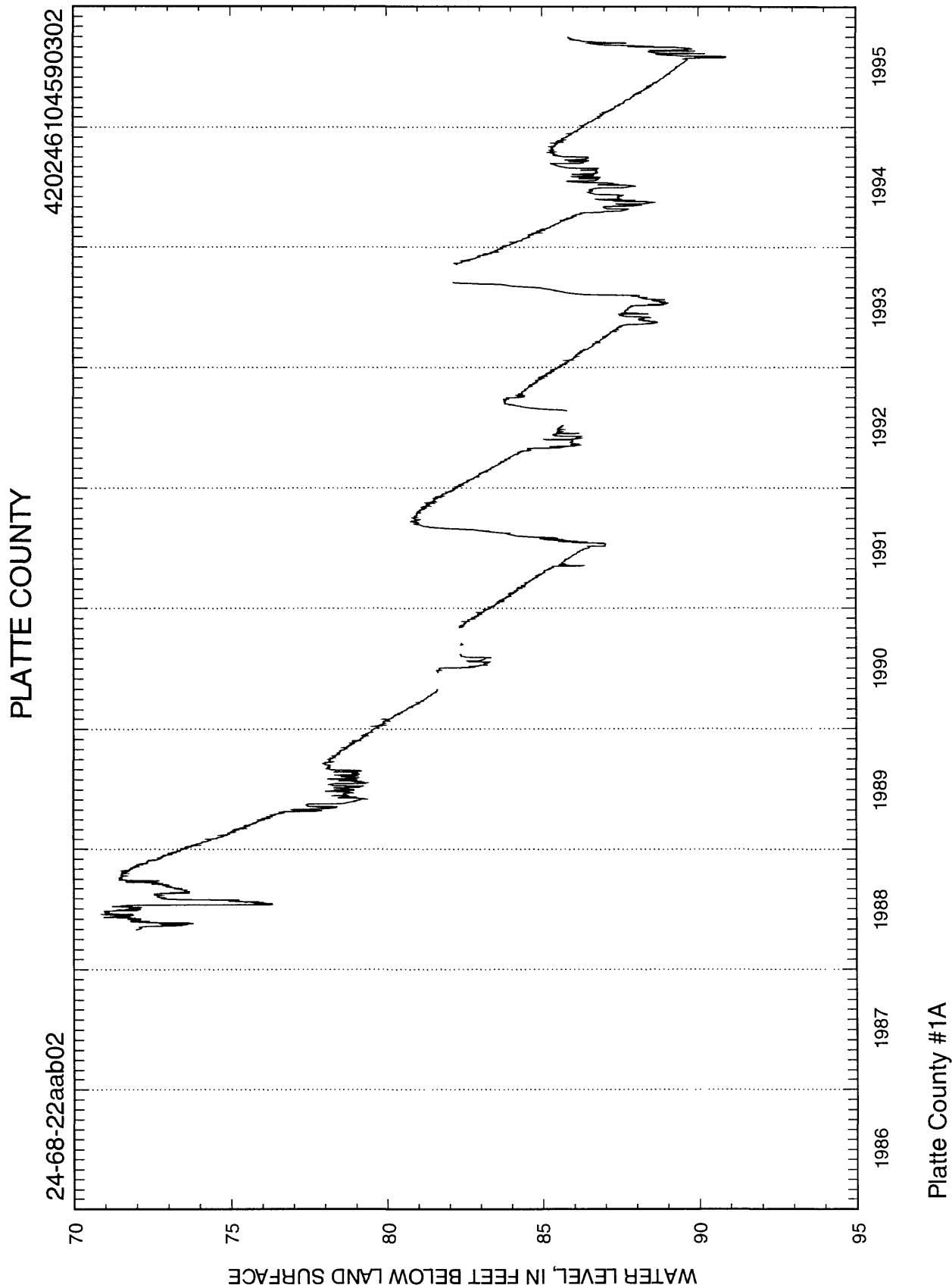
Records of observation wells in Platte County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Continuous water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
24-67-21aab01	41	U	111ALVM	1979-95	¹ 21.93	05-79	27.15	09-89
24-68-22aab02	200	U	122ARKR	1988-95	70.95	06-88	90.92	08-95
25-67-19dda01	760	U	122ARKR	1979-95	47.88	11-85	81.04	07-85
25-67-34ccd01	380	U	122ARKR	1980-95	79.49	08-87	87.35	09-80
25-68-12dda01	100	U	122ARKR	1980-95	13.30	06-84	22.73	10-94
25-68-15bbd01	220	U	122ARKR	1980-95	42.50	02-81	115.31	06-92
25-68-24aad01	240	U	122ARKR	1980-95	69.44	04-88	72.44	09-92
25-68-31aaa01	400	U	122ARKR	1979-95	20.13	11-86	35.04	08-94
26-68-12cbd01	320	U	122ARKR	1980-95	129.27	07-95	153.20	10-80
26-68-36bbb01	200	U	122ARKR	1981-95	145.23	05-88	153.73	09-94
27-69-25abc01	200	U	122ARKR	1981-95	1.63	10-88	27.03	05-82

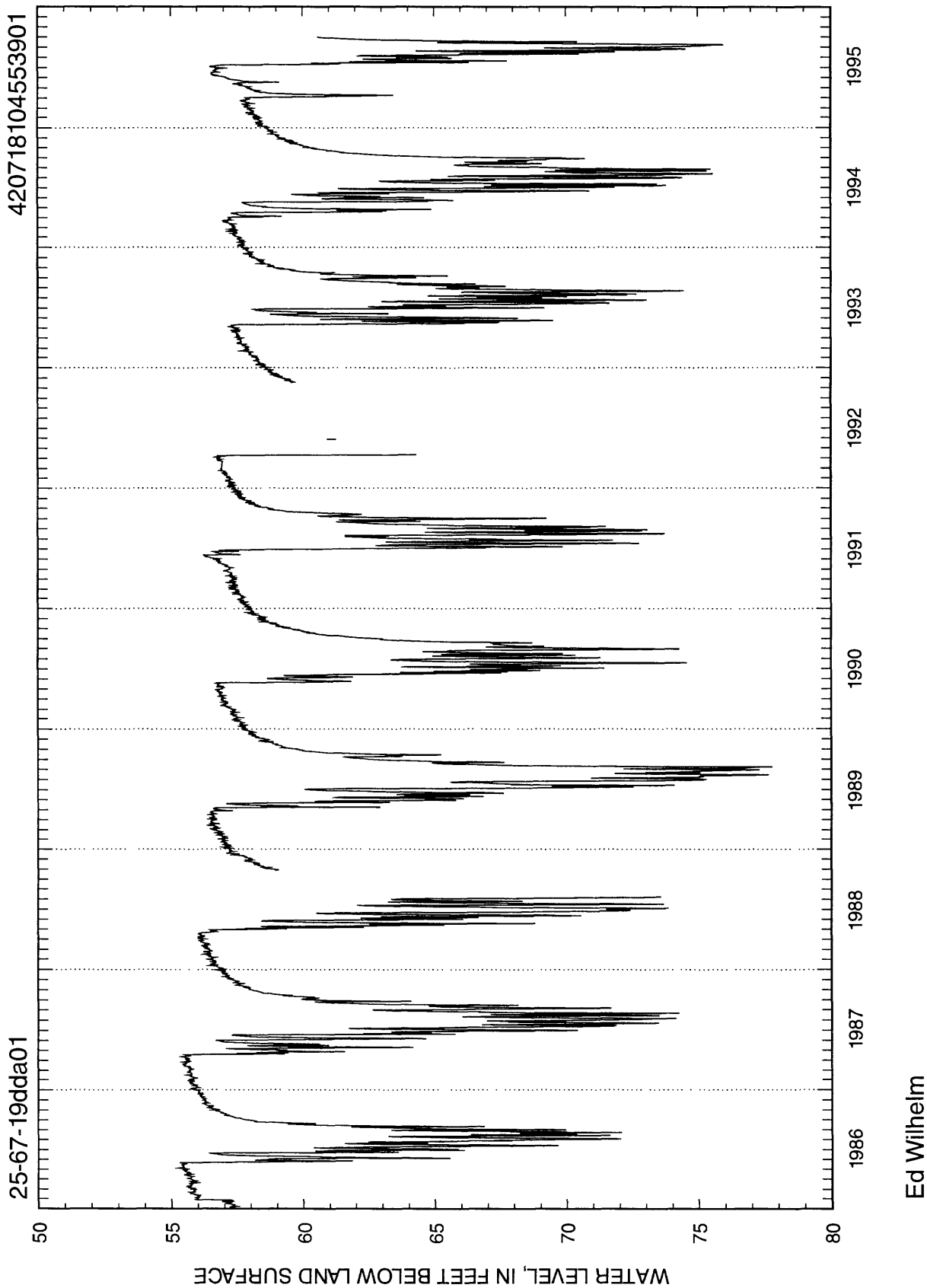
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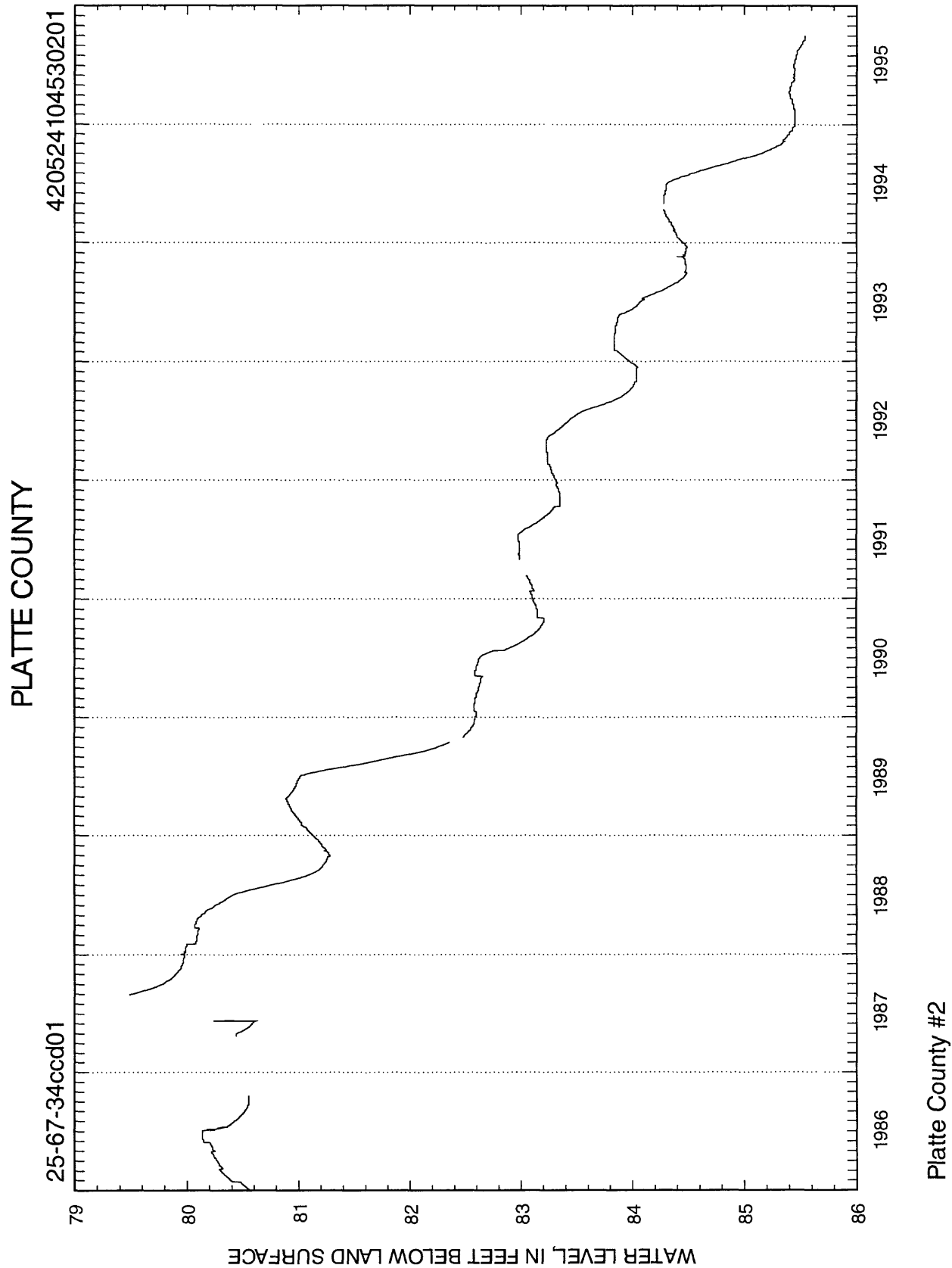
PLATTE COUNTY



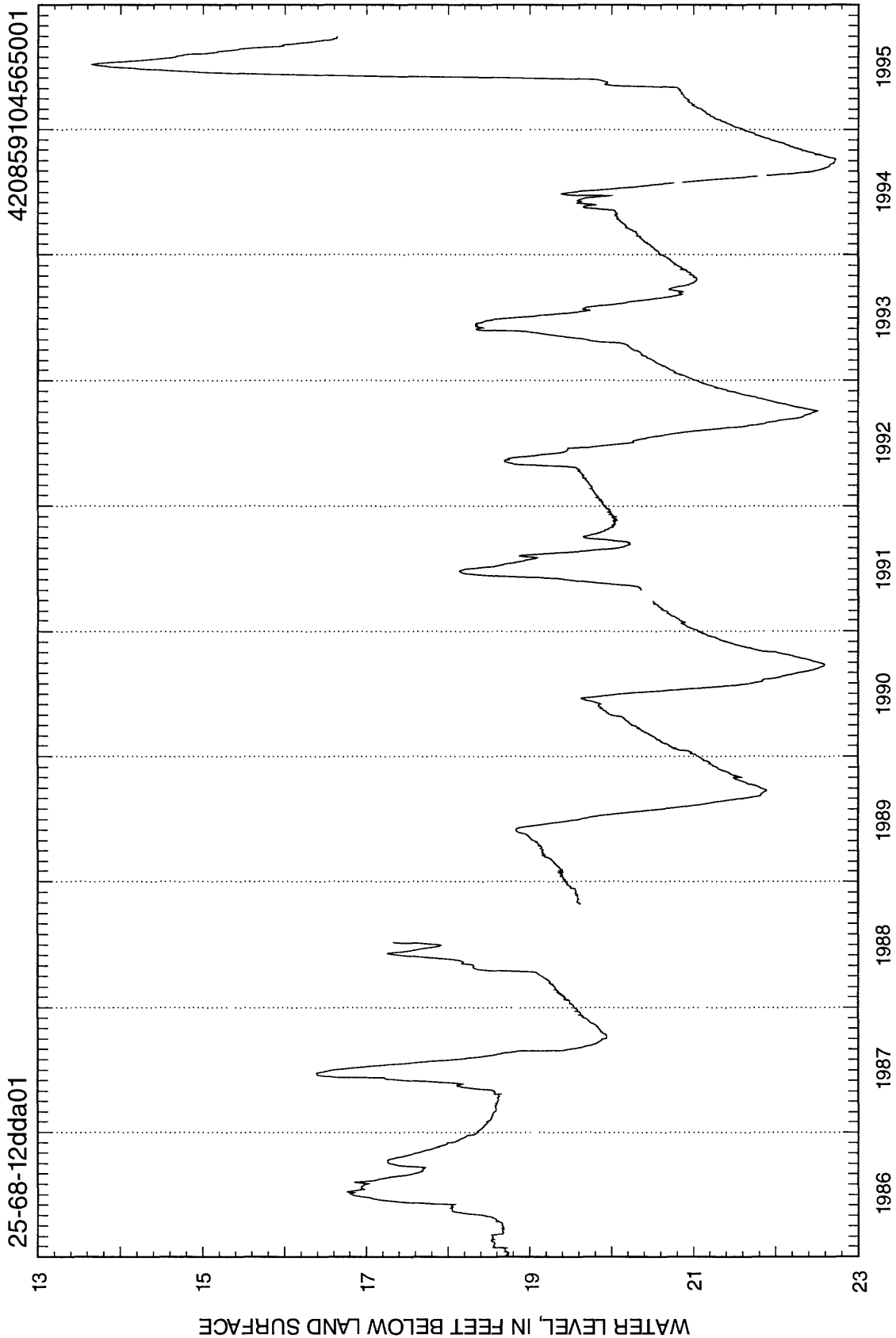


PLATTE COUNTY

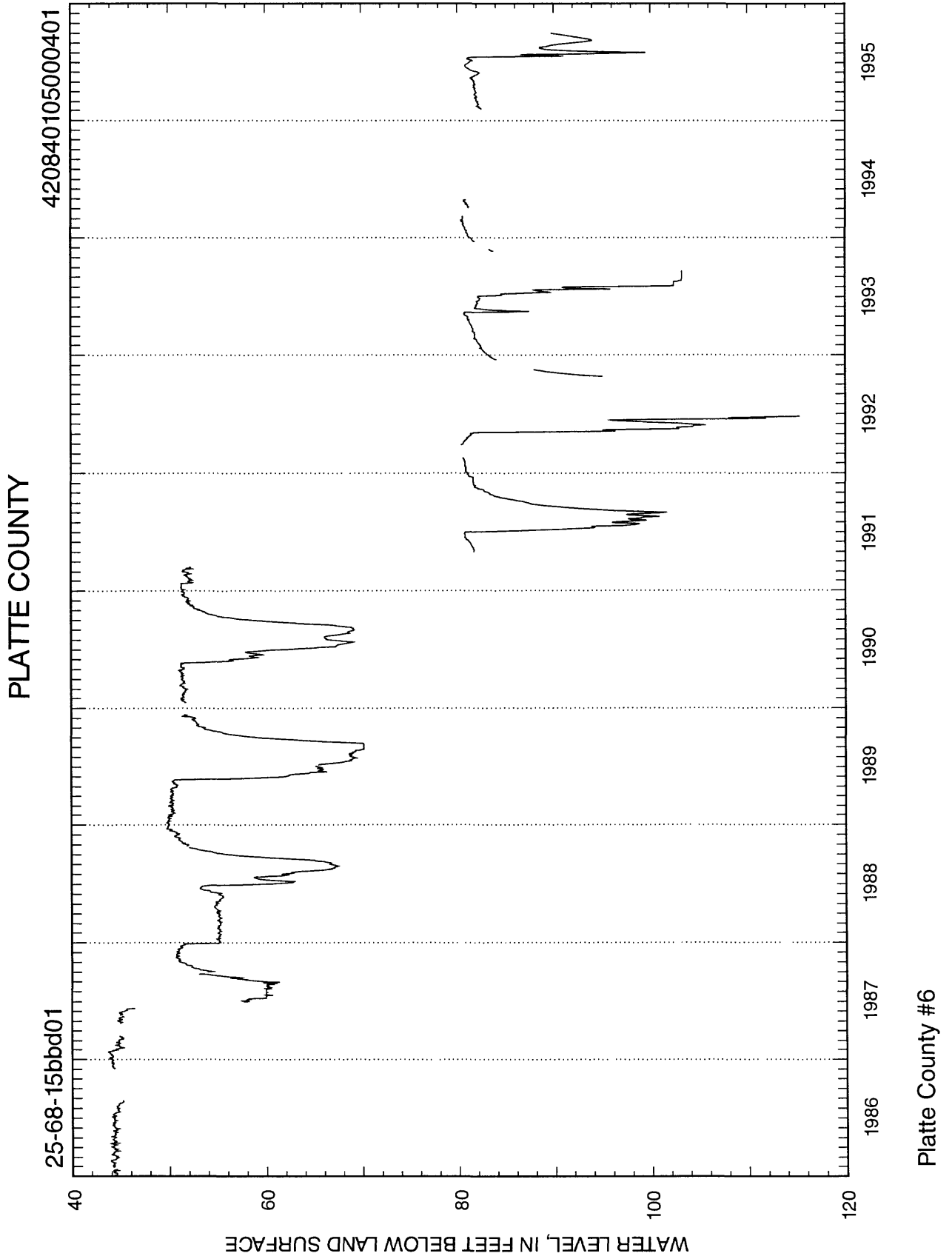




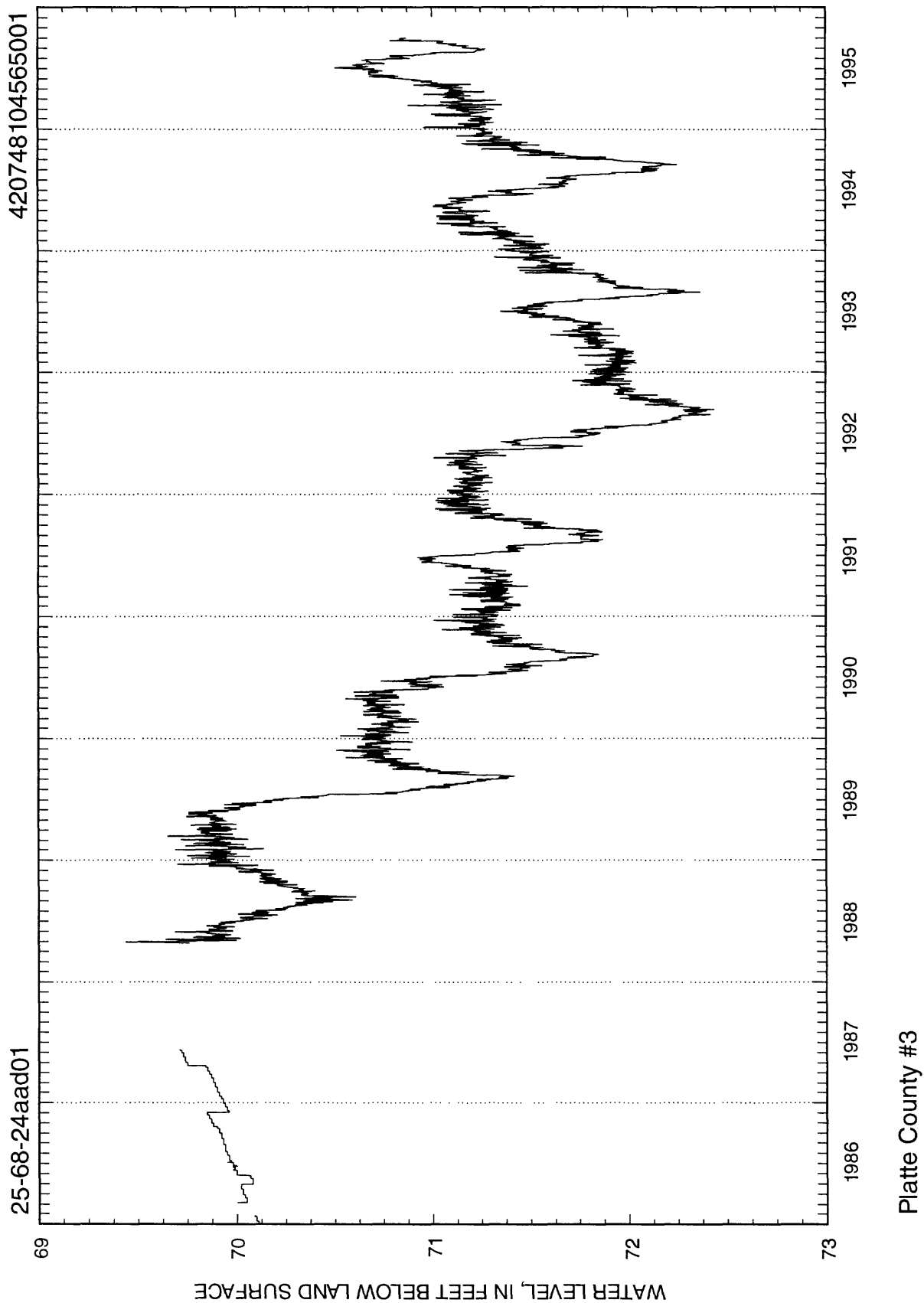
PLATTE COUNTY

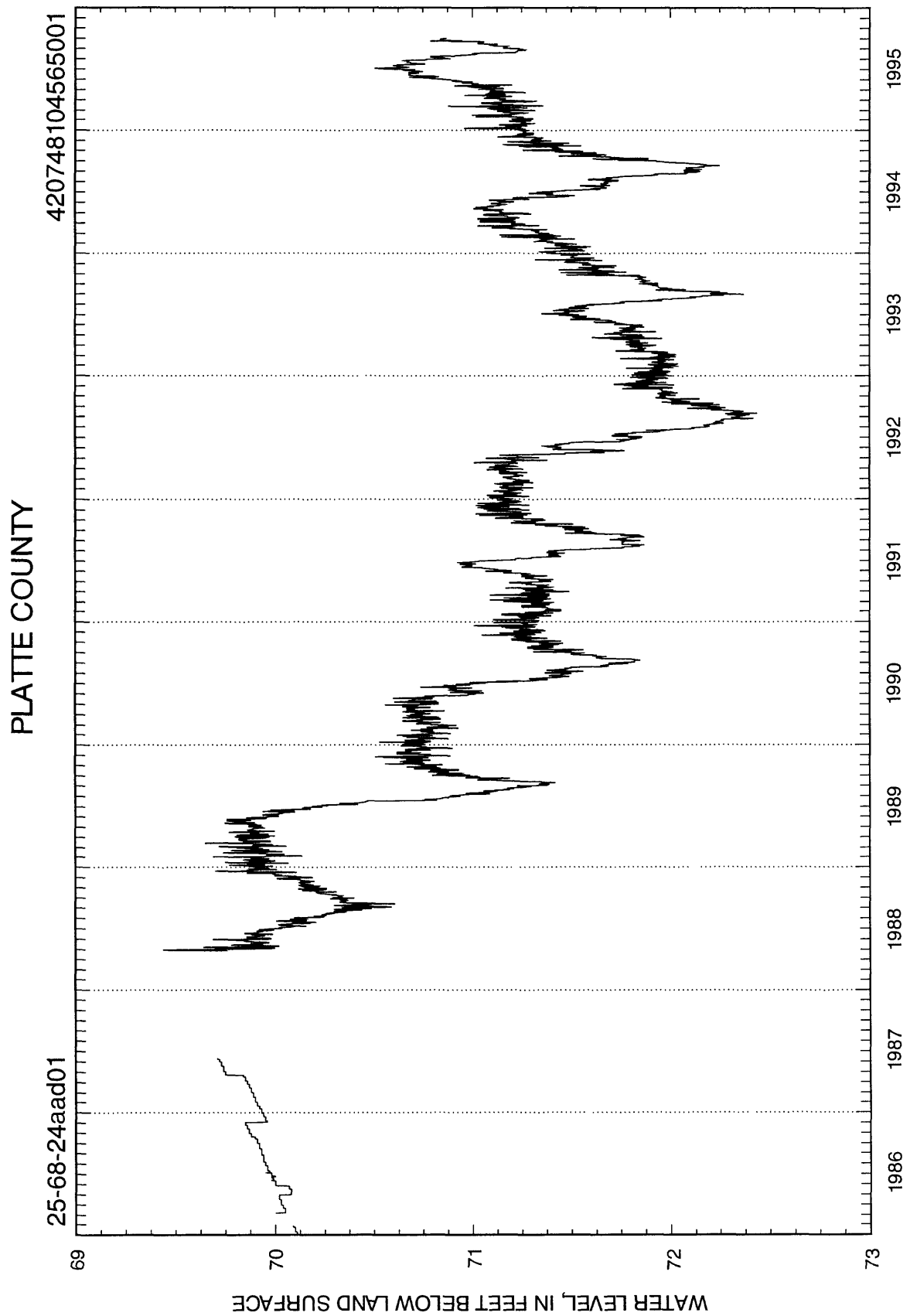


Platte County #4



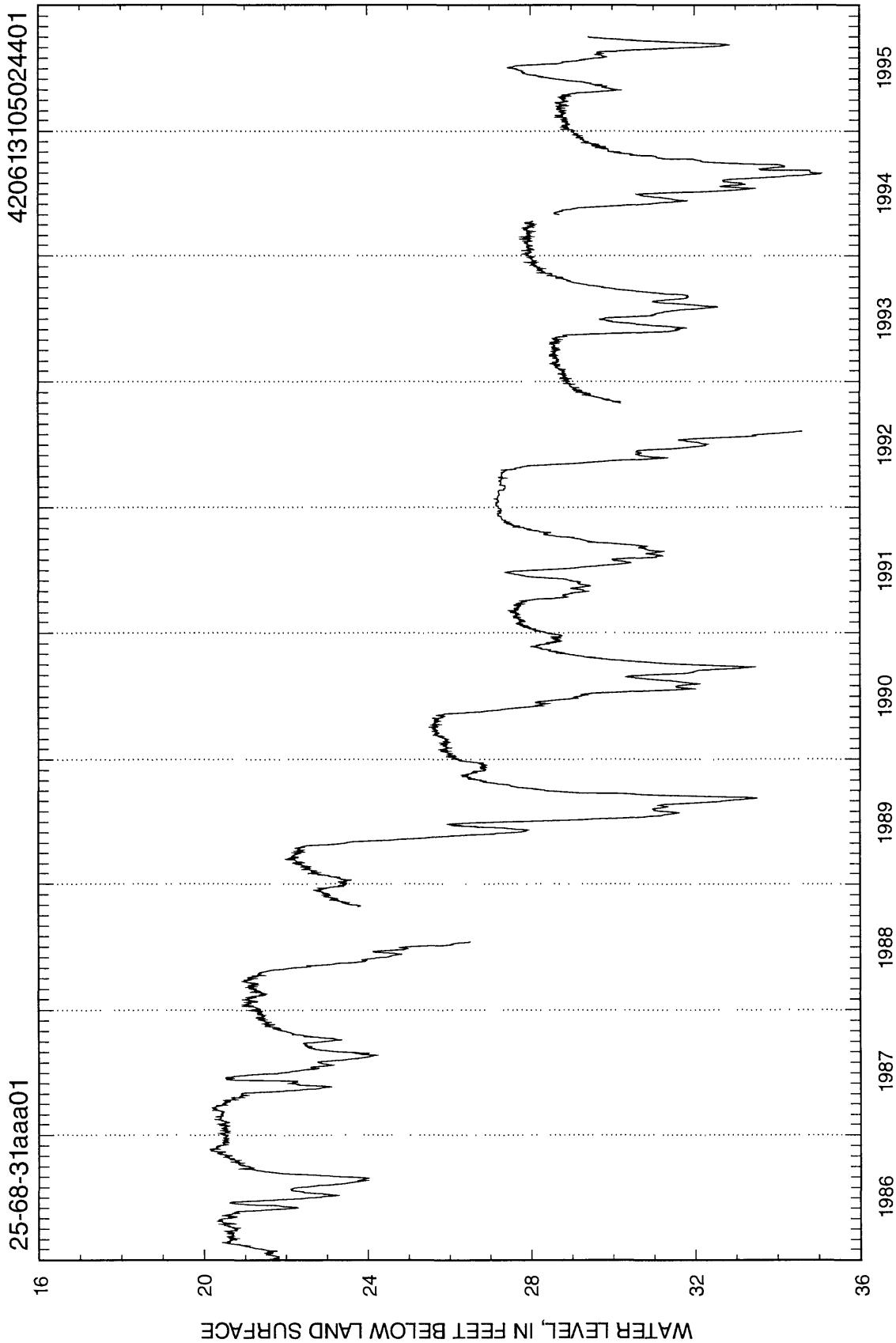
PLATTE COUNTY



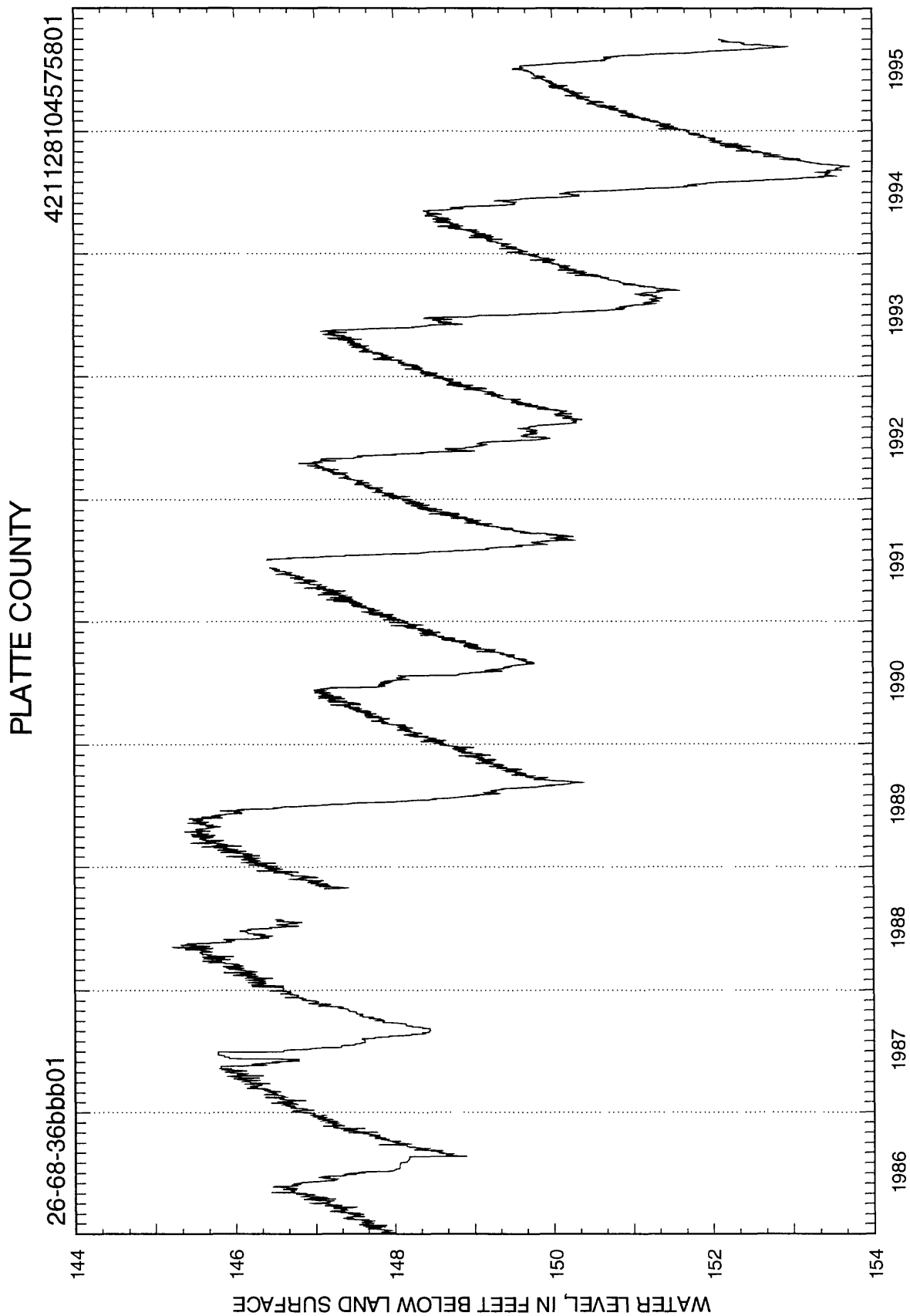


Platte County #3

PLATTE COUNTY

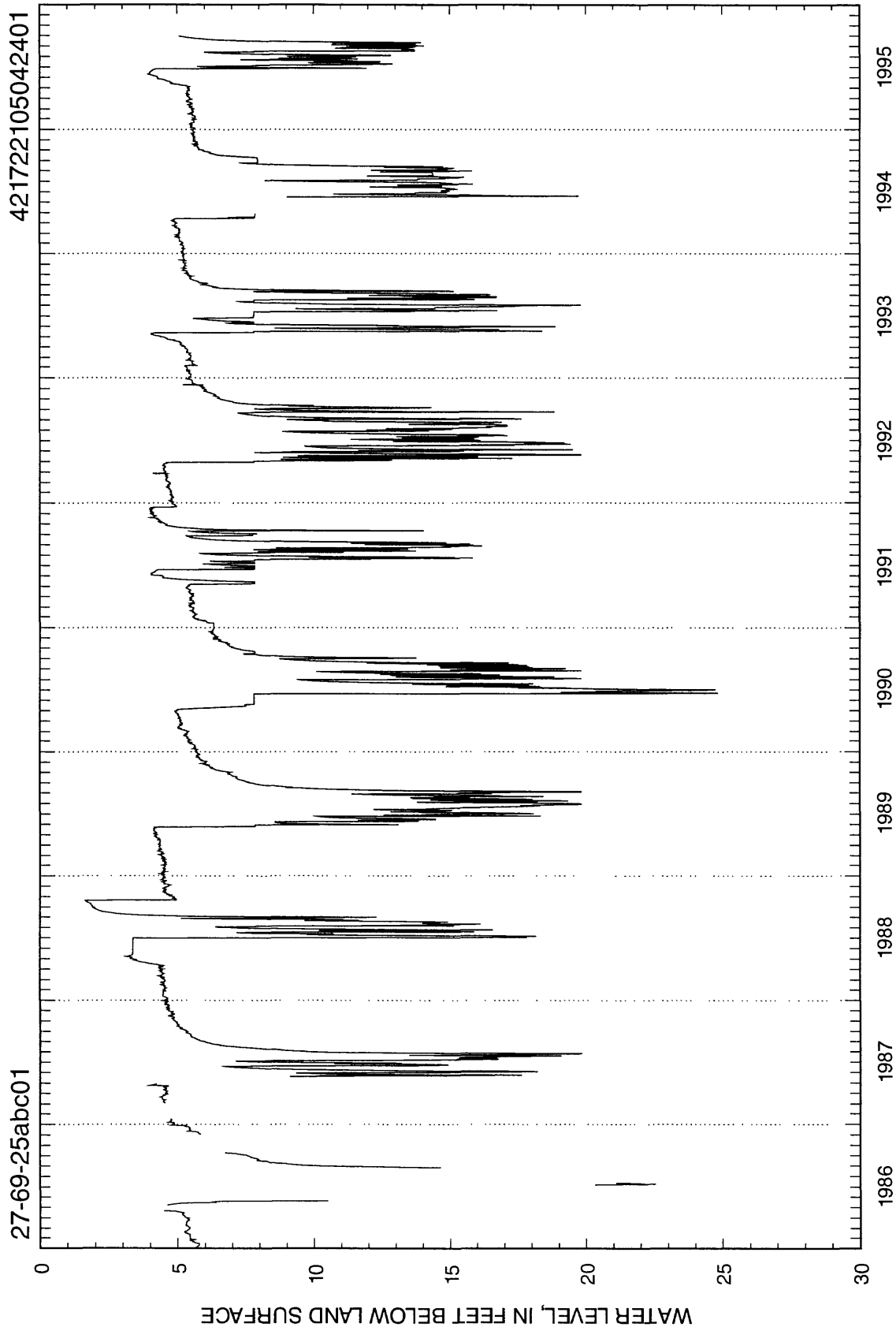


Platte County #7



Platte County #5

PLATTE COUNTY



Cottonwood Creek #1

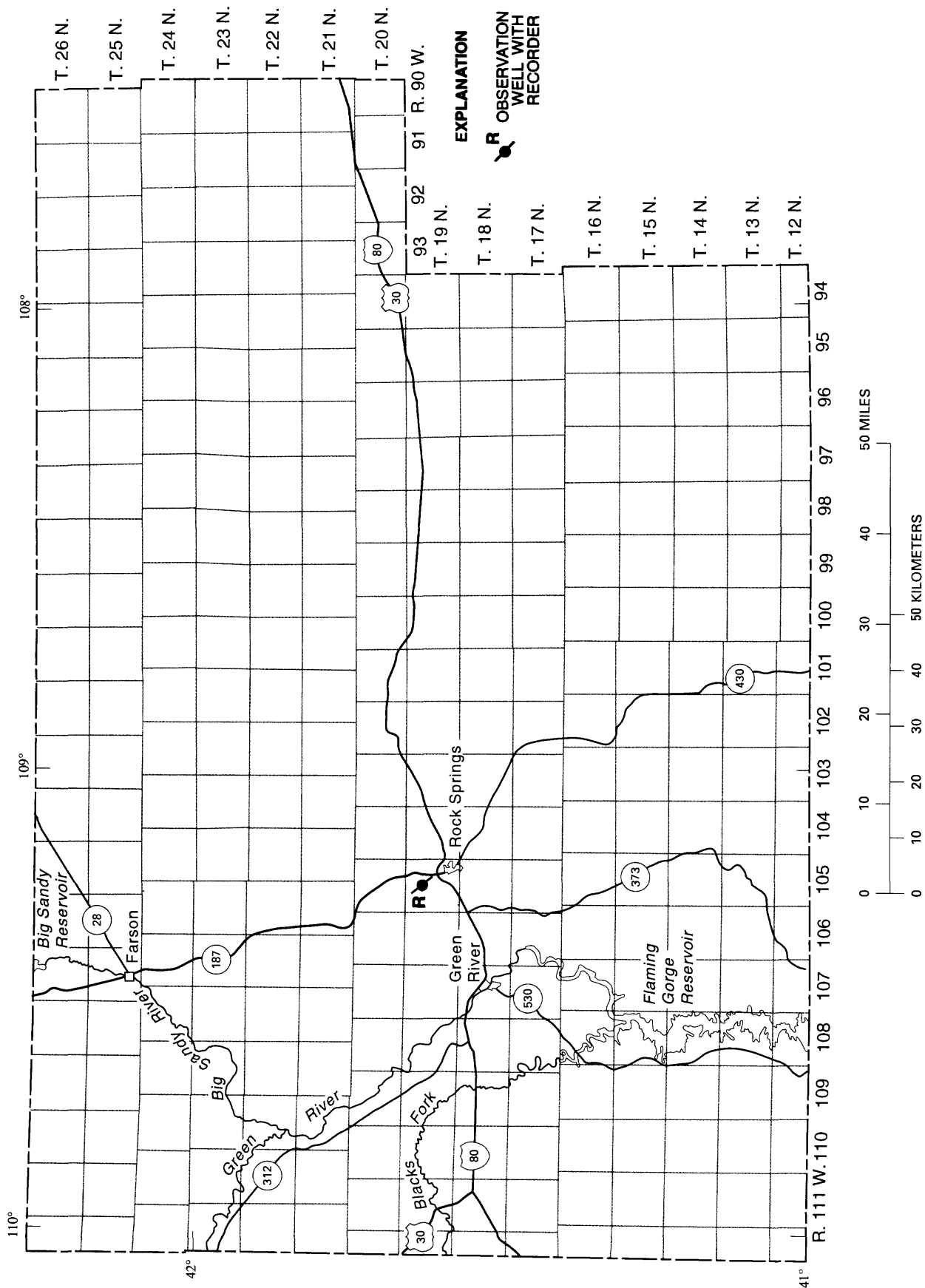
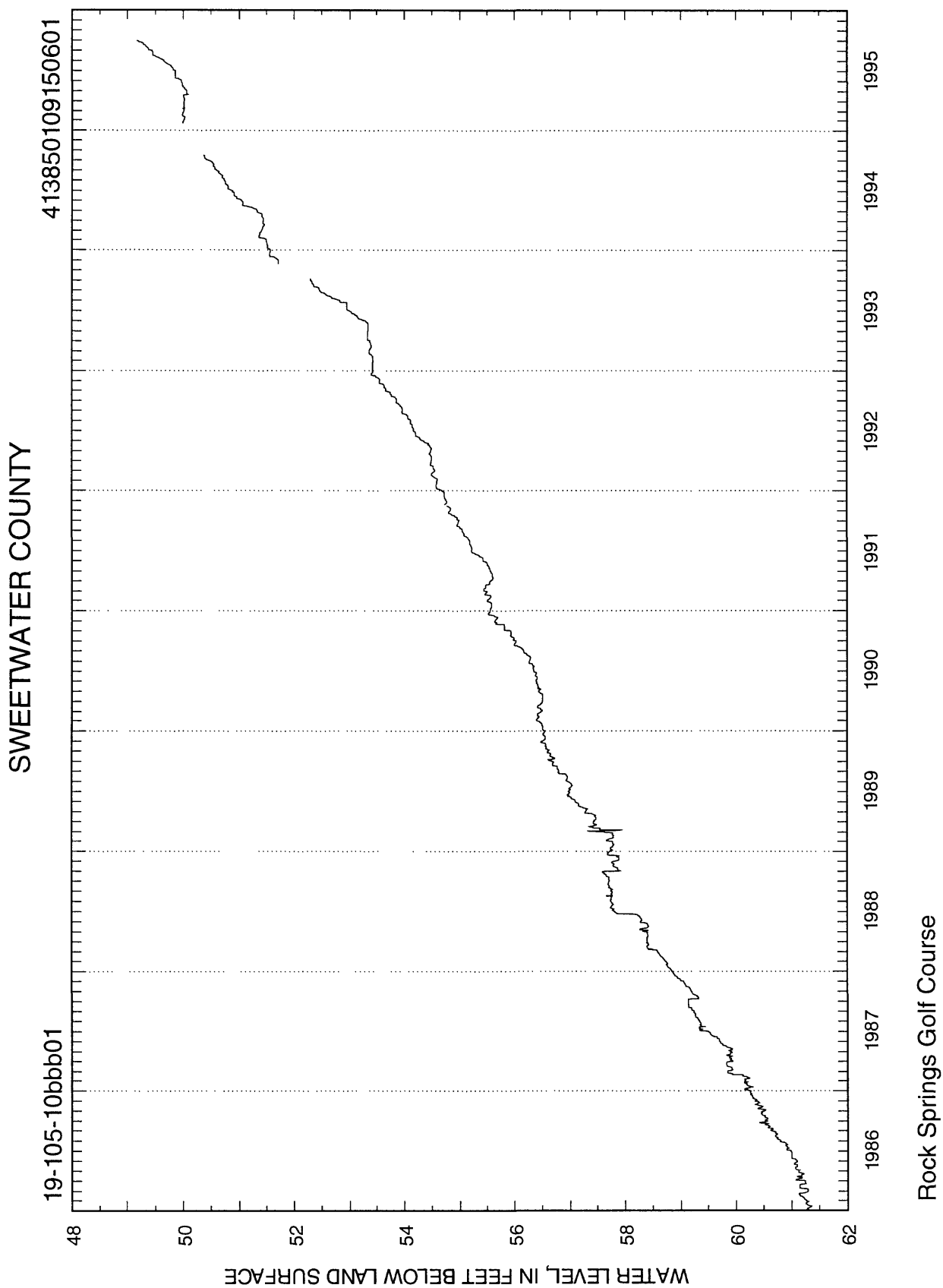


Figure 16. Location of observation well in Sweetwater County, Wyoming.

Record of observation well in Sweetwater County, Wyoming, and highest and lowest recorded water level, in feet below land surface. Continuous water-level measurements made by the U.S. Geological Survey. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
19-105-10bbb01	240	U	125FRUN	1984-95	49.17	09-95	62.36	12-84



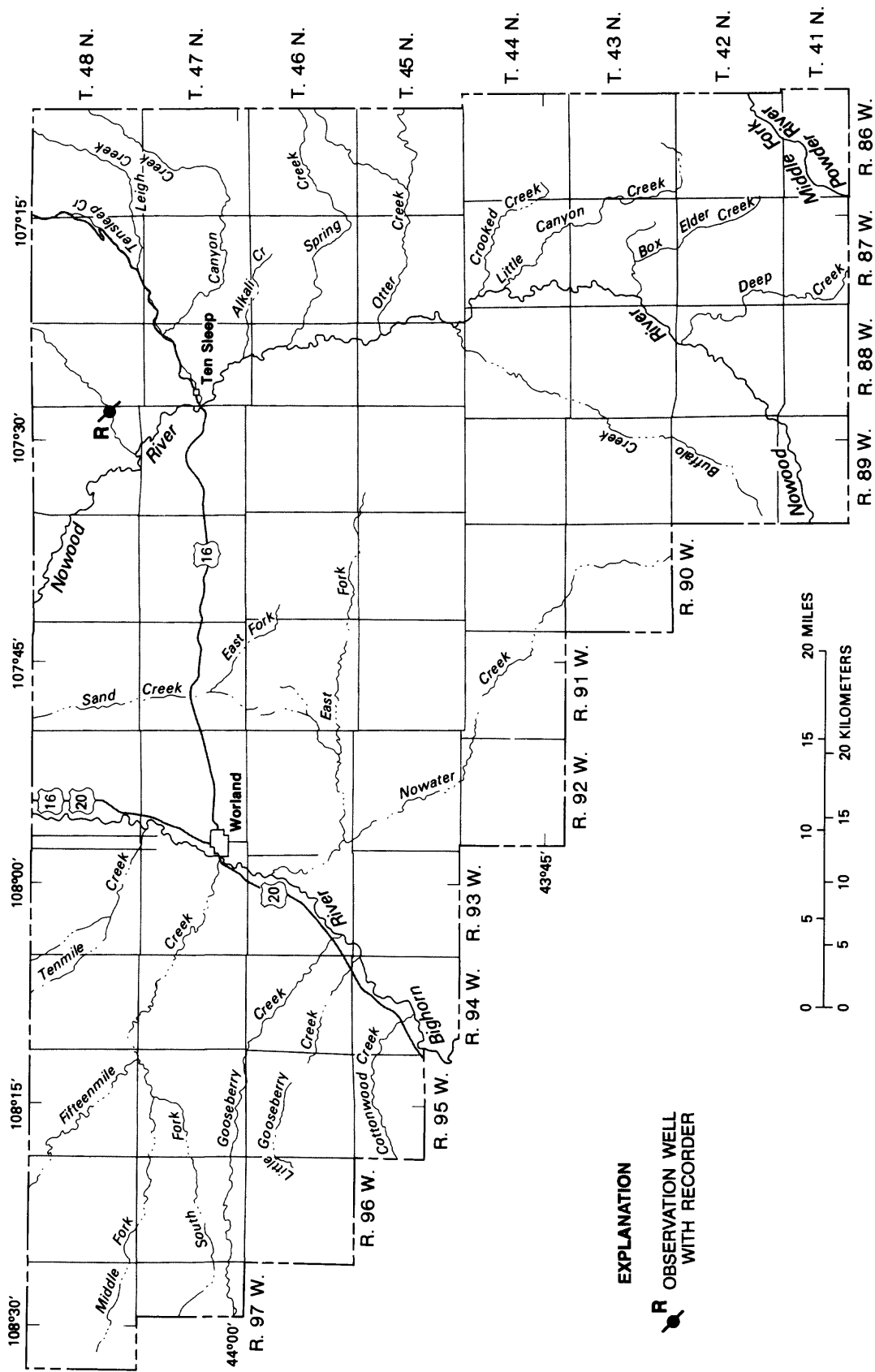


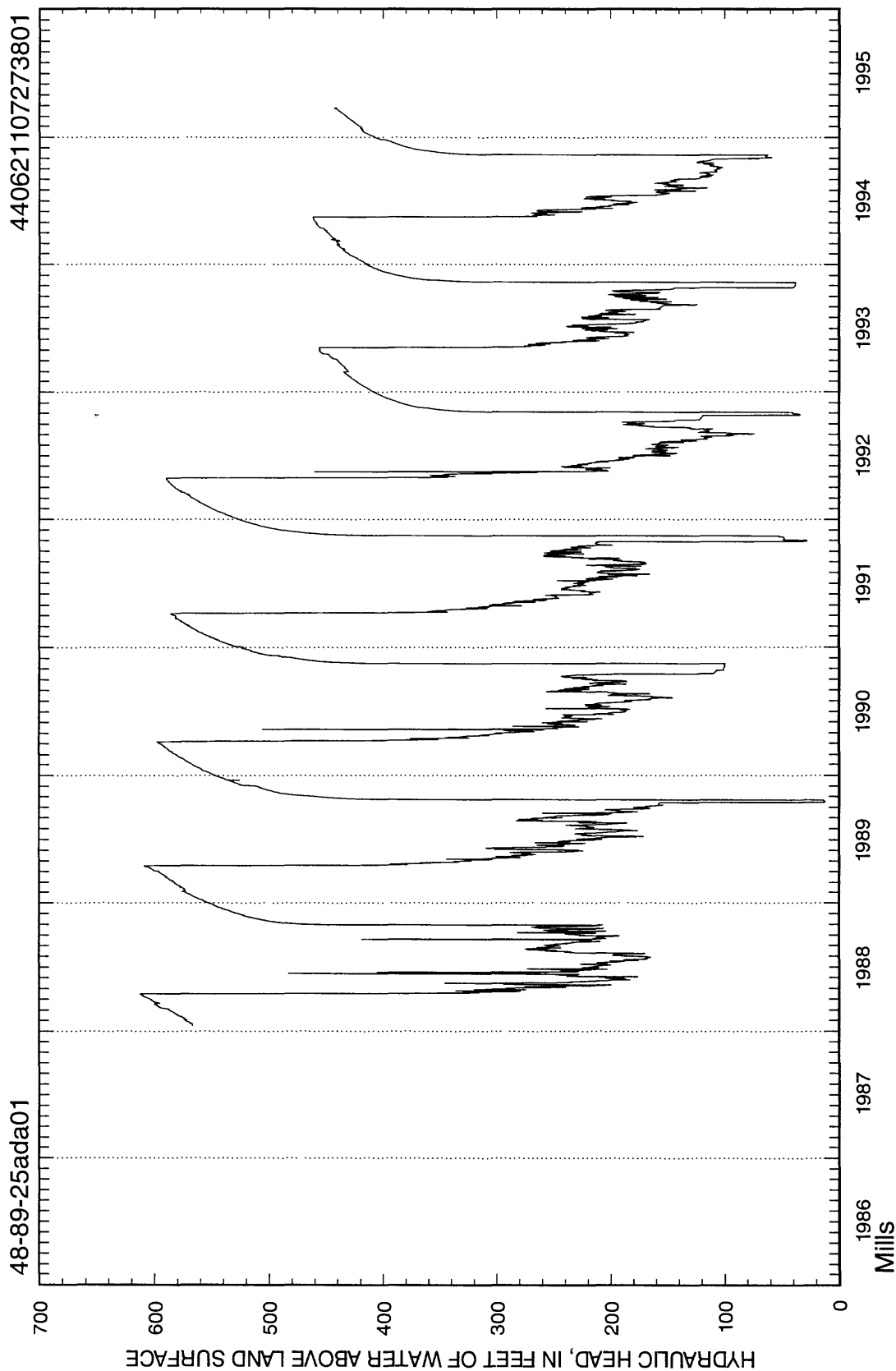
Figure 17. Location of observation well in Washakie County, Wyoming.

Record of observation well in Washakie County, Wyoming, and highest and lowest recorded hydraulic heads, in feet below land surface. Continuous water-level measurements made by the U.S. Geological Survey. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Hydraulic heads			
					Highest		Lowest	
					Head (feet)	Month- year	Head (feet)	Month- year
48-89-25ada01	2,287	I	374FLTD	1988-95	¹ 612.20	04-88	¹ 11.90	10-89

¹Flowing well, shut-in pressure was measured by pressure transducer and converted to hydraulic head above land surface for illustration purposes. Hydraulic head, in feet above land surface, was calculated by multiplying the shut-in pressure in pounds per square inch times 2.31.

WASHAKIE COUNTY



Flowing well.

The hydraulic-head data from May 13, 1992 to March 24, 1995 may be as much as 60 percent lower than the actual hydraulic head in the aquifer due to the calibration of the monitoring equipment. A comparison of hydraulic-head data between the wellhead gage and the pressure transducer is listed in the appendix.

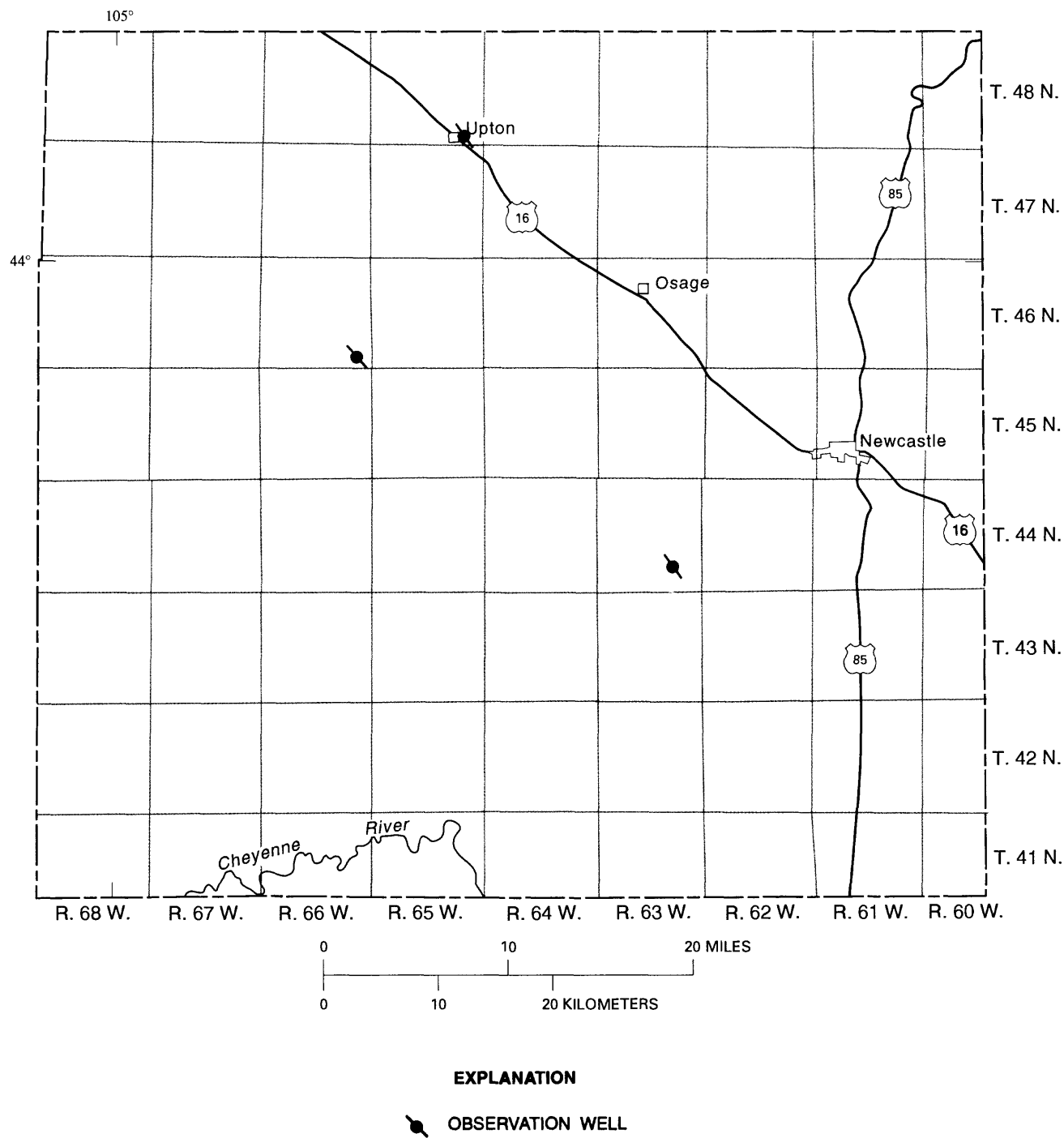


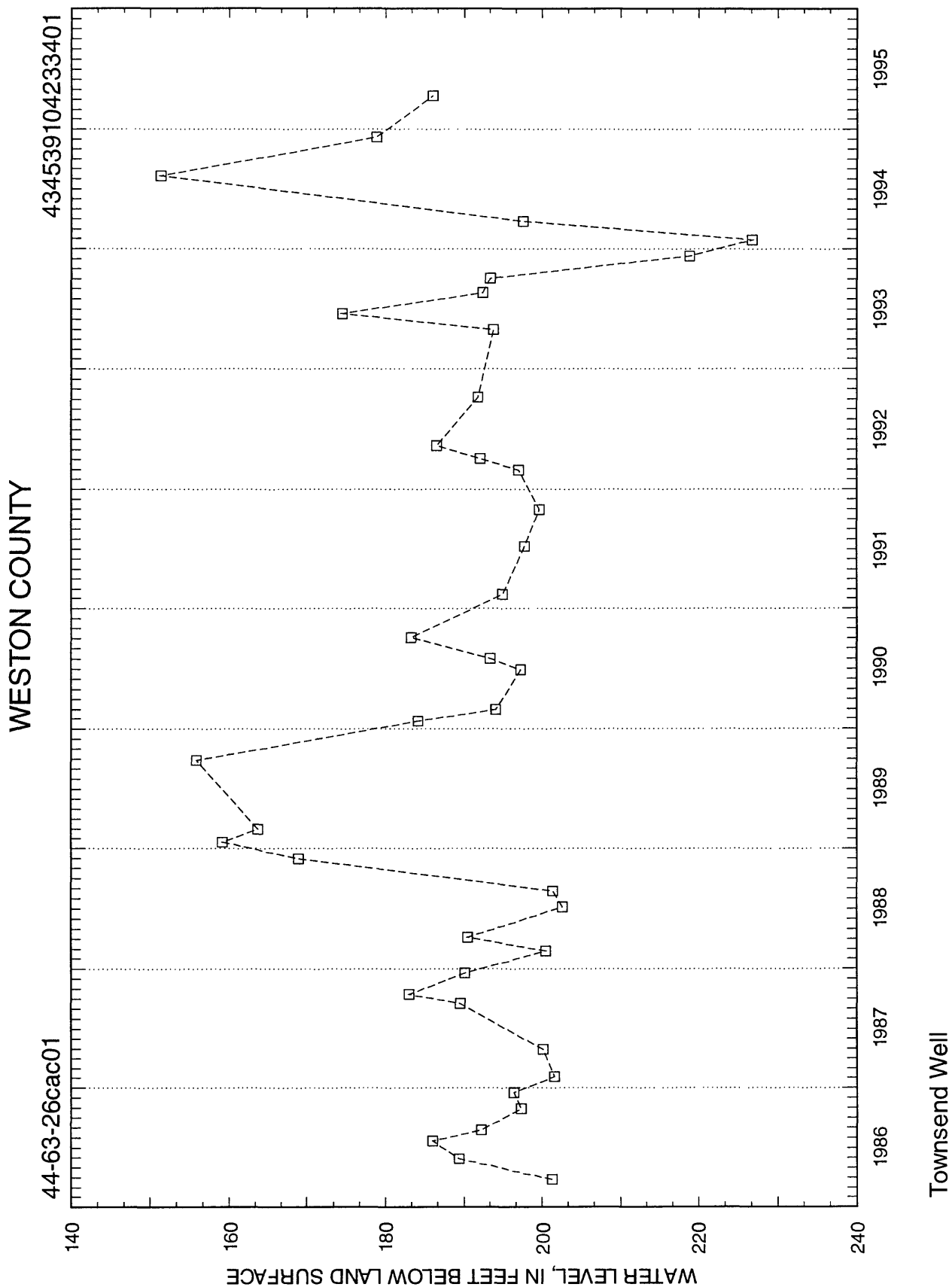
Figure 18. Location of observation wells in Weston County, Wyoming.

Records of observation wells in Weston County, Wyoming, and highest and lowest recorded water levels, in feet below land surface. Individual water-level measurements provided by the Wyoming State Engineer's Office. Numbering system for wells and explanation of column headings for tables and hydrographs are presented in the text.

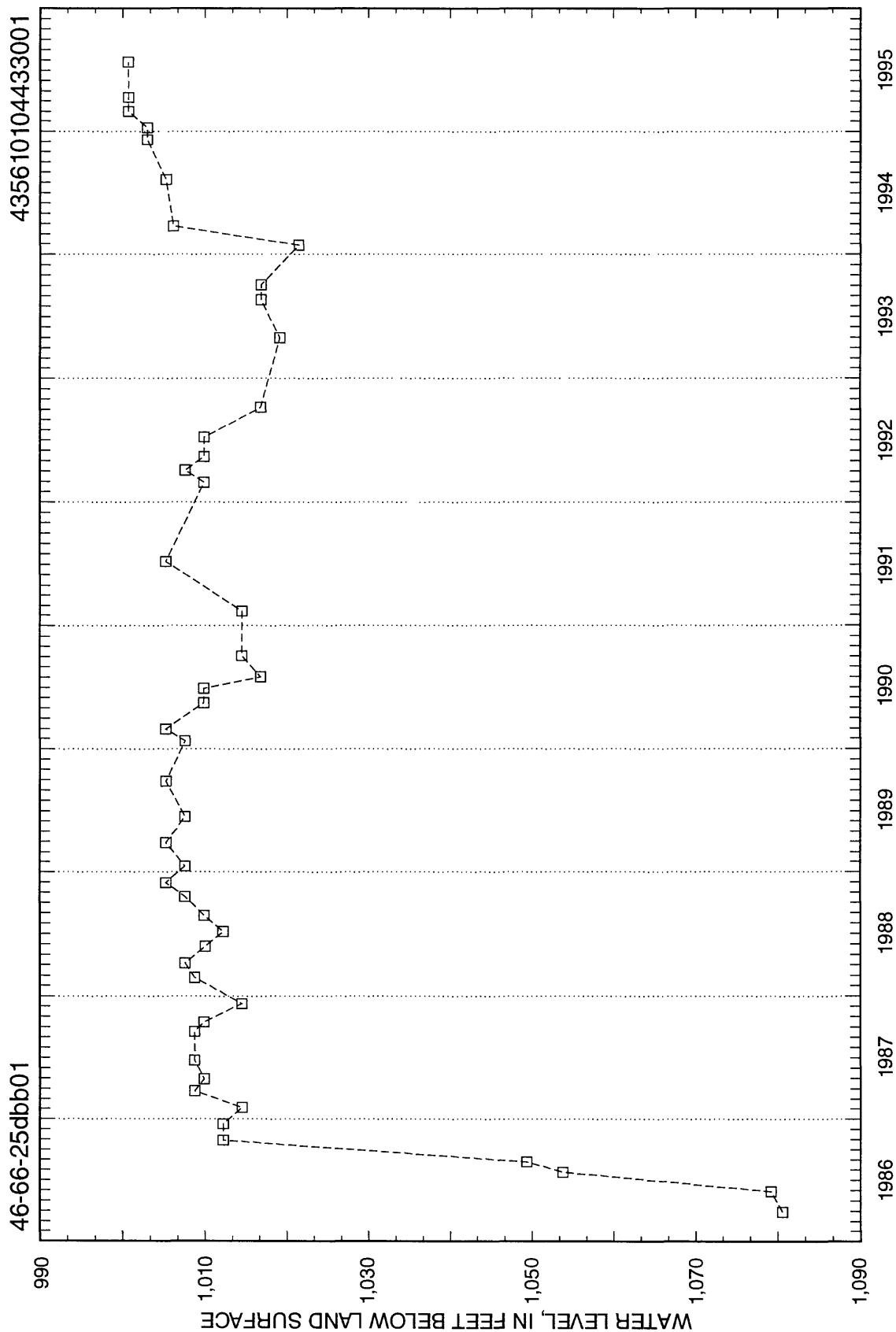
Local number	Well depth (feet below land surface)	Use of water	Principal geologic source	Record available (year)	Water levels			
					Highest		Lowest	
					Level (feet)	Month- year	Level (feet)	Month- year
44-63-26cac01	6,881	H, S, I	337PHSP	1982-95	¹ 151.35	08-94	^{1, 2} 26.80	01-94
46-66-25dbb01	8,780	U	331MDSN	1982-95	¹ 1,000.67	02-95 04-95 07-95	¹ 1,081.75	09-85
48-65-35ccb01	3,193	P	337PHSP	1982-95	¹ 10.20	03-86	^{1, 2} 280.67	01-94

¹From hand-measured data.

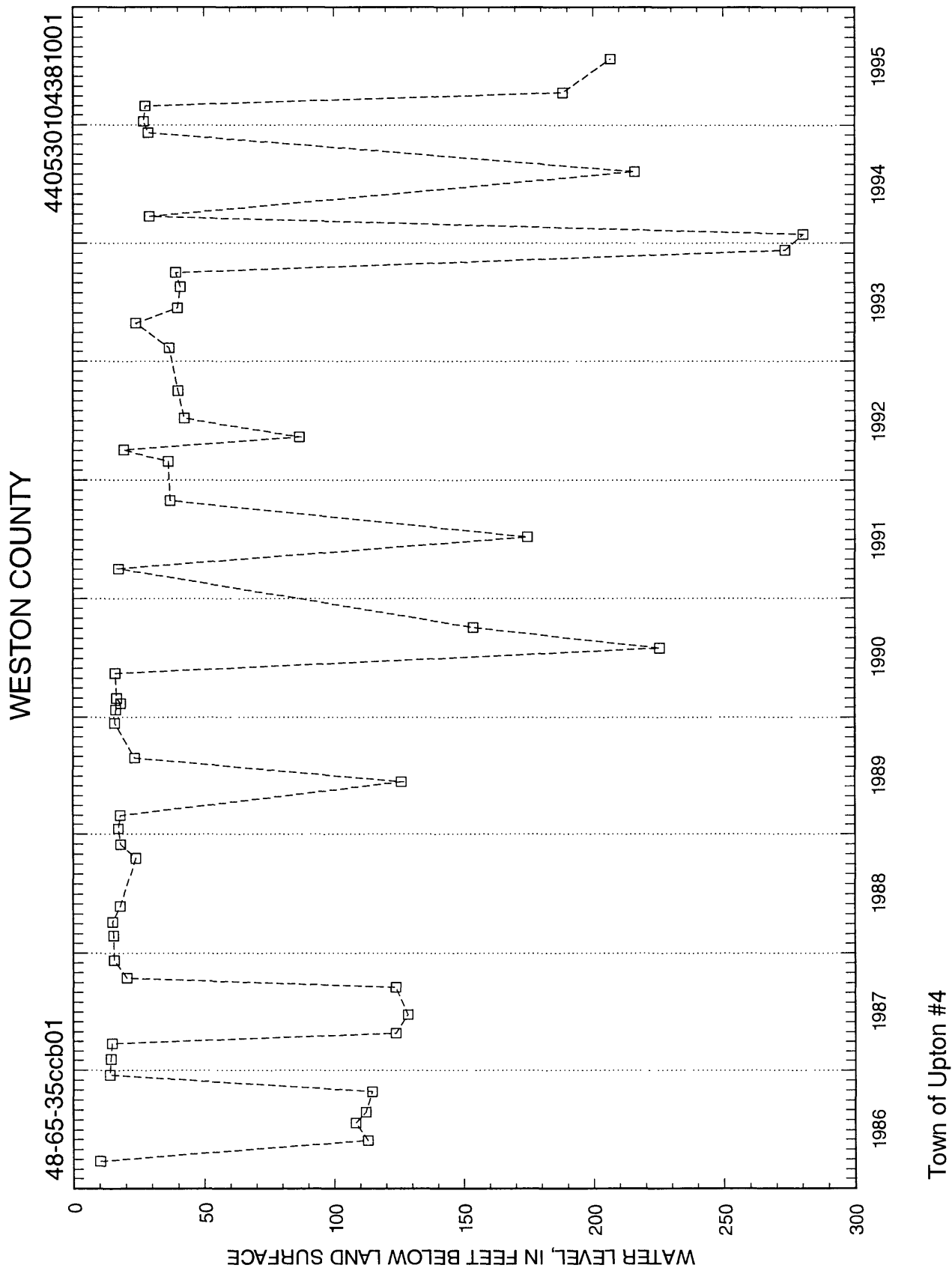
²Well being pumped.



WESTON COUNTY



Terra Resources Madison



APPENDIX

COMPARISON OF HYDRAULIC-HEAD DATA BETWEEN THE WELLHEAD GAGE AND THE PRESSURE TRANSDUCER READINGS COLLECTED DURING SITE INSPECTIONS OF THE MILLS WELL, WASHAKIE COUNTY

Instrumentation on the Mills well (local number 48-89-25ada01) in Washakie County was installed in January 1988. The pressure transducer used on the well was calibrated with a pressure gage that was dead weight tested and is accurate to within 1 pound per square inch. The pressure gage mounted on the wellhead is not capable of the same accuracy as the gage used to calibrate the transducer. Small discrepancies between the wellhead gage and the transducer readings are expected due to the lower accuracy of the wellhead gage. After May 1992, the discrepancies between the wellhead gage and transducer readings greatly increased indicating there may have been a problem with the calibration of the transducer.

Hydraulic heads collected from the Mills well

Date collected	Hydraulic head, in feet above land surface, from pressure gage on wellhead	Hydraulic head, in feet above land surface, from pressure transducer
1-26-88	633	570
3-4-88	638	588
5-26-88	173	142
8-22-88	254	232
11-4-88	527	490
2-2-89	596	572
5-16-89	293	267
8-24-89	266	237
11-29-89	543	512
3-23-90	617	590
7-18-90	220	193
11-15-90	453	432
3-5-91	624	574
7-23-91	215	179
12-3-91	550	497
5-13-92	319	274
11-16-92	522	370
4-19-93	628	454
11-3-93	92	38
3-15-94	612	444
7-29-94	166	119