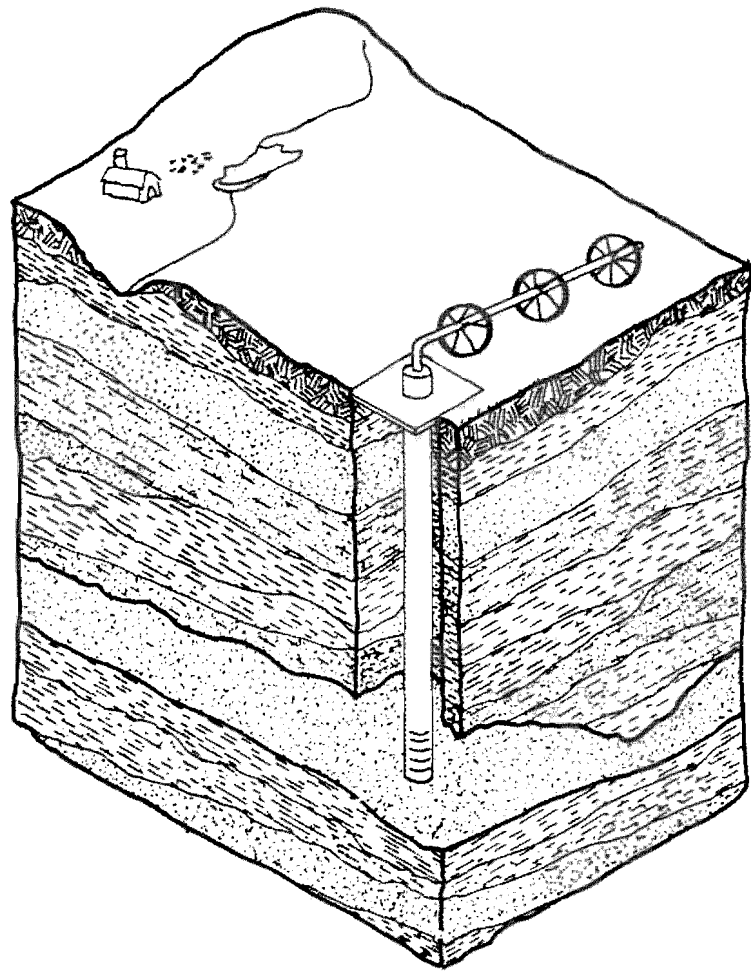


GROUNDWATER LEVELS IN OBSERVATION WELLS IN OKLAHOMA FOR 1990

Technical Report 90-2



OKLAHOMA WATER RESOURCES BOARD

June 1990

GROUNDWATER LEVELS
IN OBSERVATION WELLS IN OKLAHOMA
FOR 1990

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Danny Spiser
and
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GROUNDWATER AND ADMINISTRATION DIVISIONS
Oklahoma Water Resources Board
James R. Barnett
Executive Director

June 1990

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The authors are particularly grateful to James R. Barnett, Executive Director; Mike Melton, Assistant Director; Duane A. Smith, Groundwater Division Chief; Jim Schuelein, Administration Division Chief; James Leewright, Drafting Section Head and Jann Hook, Data Processing Section Head.

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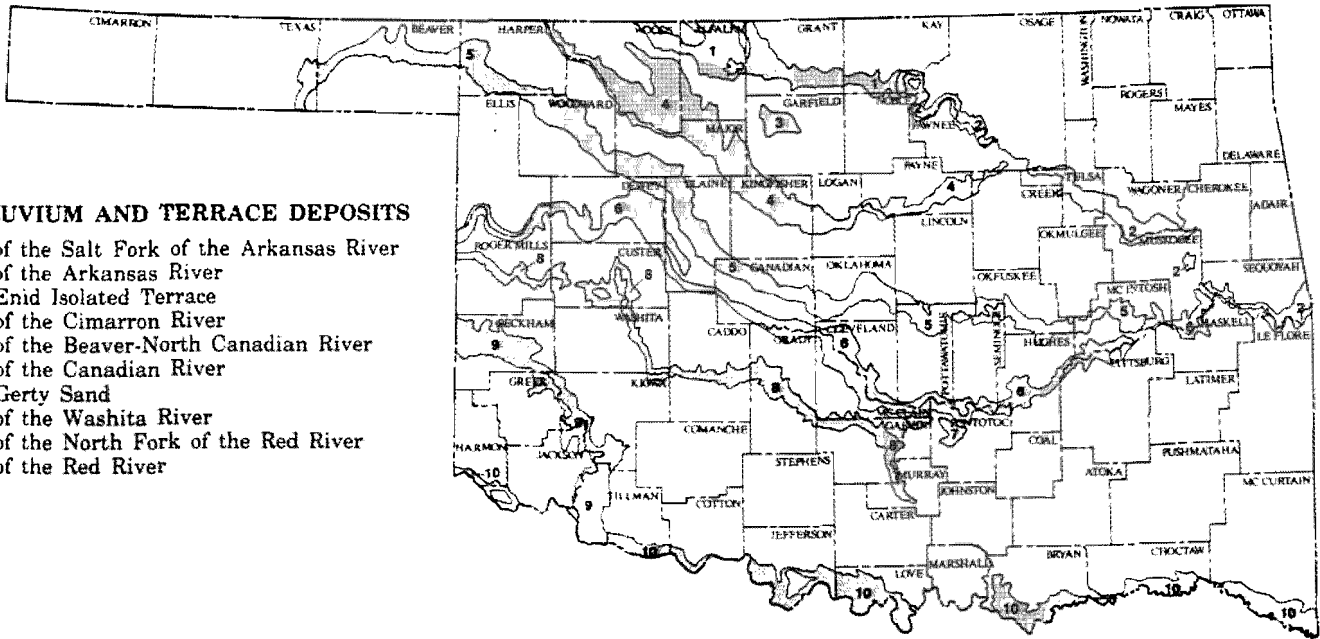
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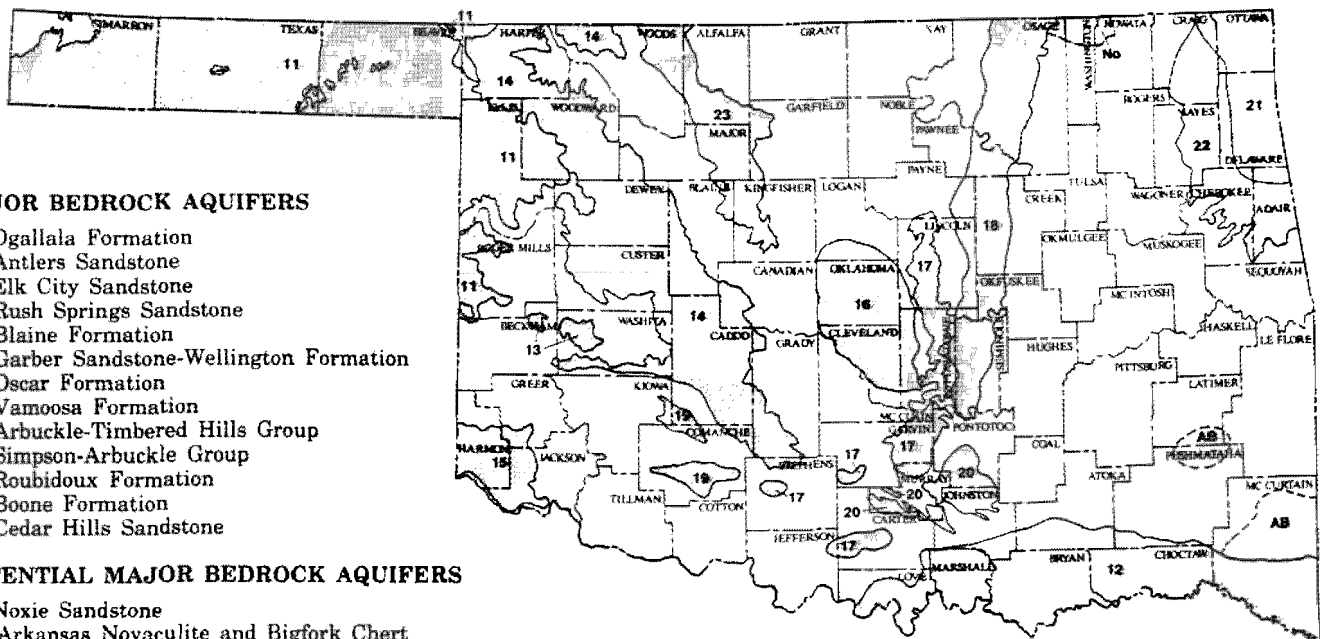
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MAJOR GROUNDWATER BASINS IN OKLAHOMA



ALLUVIUM AND TERRACE DEPOSITS

1. of the Salt Fork of the Arkansas River
2. of the Arkansas River
3. Enid Isolated Terrace
4. of the Cimarron River
5. of the Beaver-North Canadian River
6. of the Canadian River
7. Gerty Sand
8. of the Washita River
9. of the North Fork of the Red River
10. of the Red River



MAJOR BEDROCK AQUIFERS

11. Ogallala Formation
12. Antlers Sandstone
13. Elk City Sandstone
14. Rush Springs Sandstone
15. Blaine Formation
16. Garber Sandstone-Wellington Formation
17. Oscar Formation
18. Vamoosa Formation
19. Arbuckle-Timbered Hills Group
20. Simpson-Arbuckle Group
21. Roubidoux Formation
22. Boone Formation
23. Cedar Hills Sandstone

POTENTIAL MAJOR BEDROCK AQUIFERS

- No—Noxie Sandstone
 AB—Arkansas Novaculite and Bigfork Chert

Data—U.S. Geological Survey, Oklahoma Geological Survey and Oklahoma Water Resources Board
 Mapping—Oklahoma Water Resources Board

INTRODUCTION

Oklahoma's groundwater level measurement program was begun in 1937 to record fluctuations in groundwater levels, assist in determination of groundwater use trends for prediction of groundwater supplies and to provide data for hydrogeologic investigations of state aquifers. This report presents groundwater level data collected in 1990 and addresses how water levels vary over time.

COLLECTION OF DATA

The groundwater measurement network includes water wells throughout the state used for irrigation, municipal, stock, domestic and industrial purposes. Water levels are measured each year from January through March, when most irrigation wells are not being pumped. Water levels represent the static level for many of the state aquifers.

Water levels are measured from an established measuring point above the land surface to the nearest 0.01 foot for each well using a chalked steel tape. Depth to water below land surface is determined by subtracting the value of the measuring point from the measured depth to water obtained from the steel tape.

Water levels and depth to water are in feet below land surface. Negative values indicate a decline in water levels.

ORGANIZATION OF DATA SHEETS

County

Water well data are listed alphabetically by county where the water well is located.

Aquifer

The aquifer field description includes the name of the formation in which the well is completed. The formation does not necessarily reflect the major groundwater basin, if any, in the area.

Legal Description

The legal descriptions in this report follow the section-township-range method used in Oklahoma. The description of the water well location is described to the nearest 10-acre tract. Within each county legal descriptions are organized from smallest to largest number - by range, township and section.

Well Use

Well use indicates the specific purpose for the water well. This information was determined when the well was initially evaluated for inclusion in the network.

Elevation of Land Surface

The elevation of land surface at the well location is determined from a U.S. Geological Survey 7.5 minute quadrangle topographic map. The elevation is expressed in feet above mean sea level and is based on the 1927 North American Datum. Elevations are accurate to within 10 feet.

Total Depth of Well

Total depth of well is the depth of the well as determined from a driller's well log or by field measurement with a steel tape. The total depth of the well, if determined, is accurate to within a few feet.

Period of Record

Period of record is the length of time water levels have been measured at a particular well.

Minimum and Maximum Depth to Water

The minimum and maximum depths to water are the shallowest and deepest water levels determined from historical records. These values may represent depths measured at times of the year other than January through March.

Water Level Summary - Date and Water Level

The water level is the depth to water for a well measured on the date indicated.

Site Status Code

The site status code indicates the condition of the well site and the immediate vicinity at the time of the measurement. The site status codes include:

- D - dry
- E - flowed recently
- F - flowing
- G - nearby well flowing
- H - nearby well recently flowed
- I - injector site
- J - injector site monitor
- N - measurement discontinued

O - obstruction
P - pumping
R - well recently pumped
S - nearby well pumped
T - nearby well recently pumped
blank - site status is normal

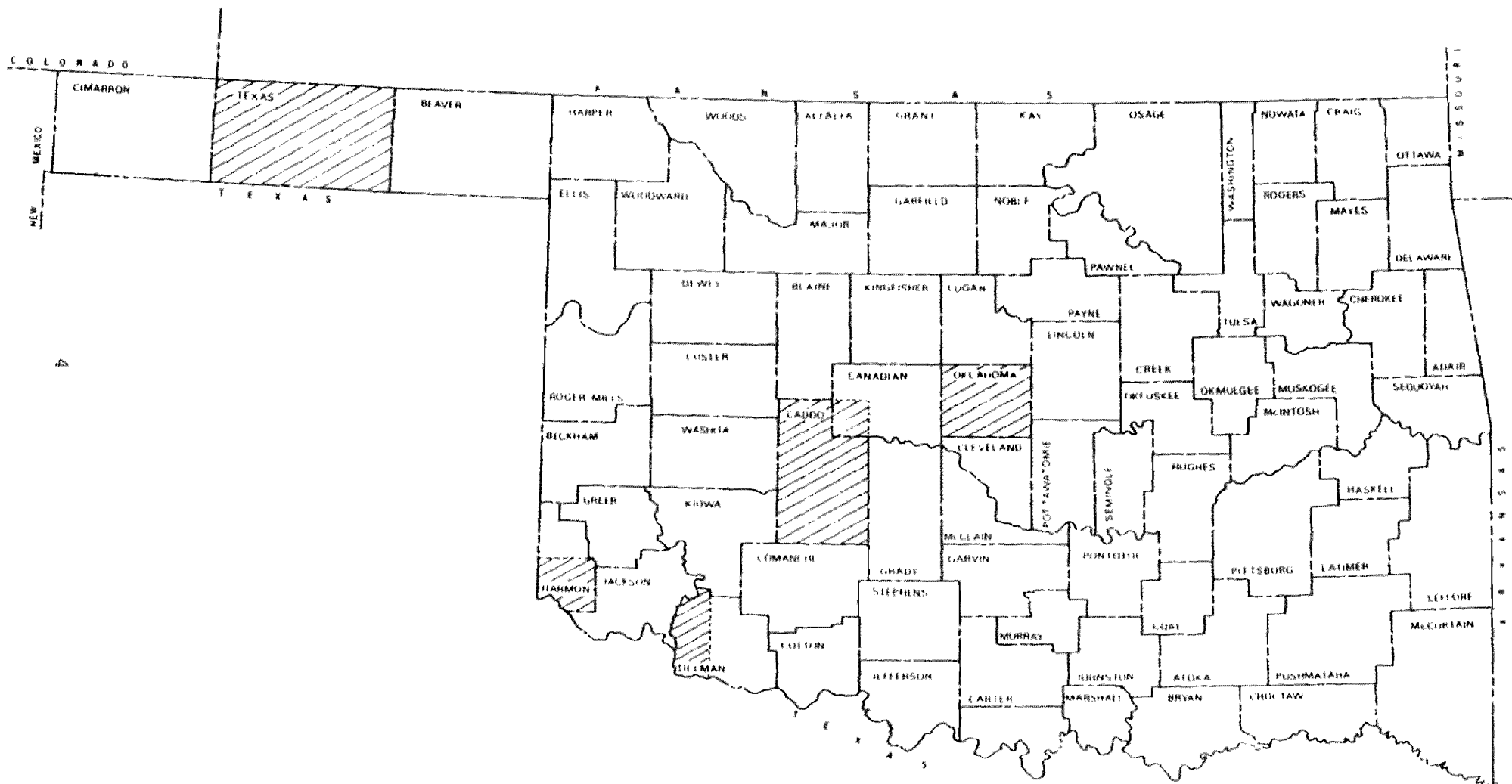
Change in Water Levels

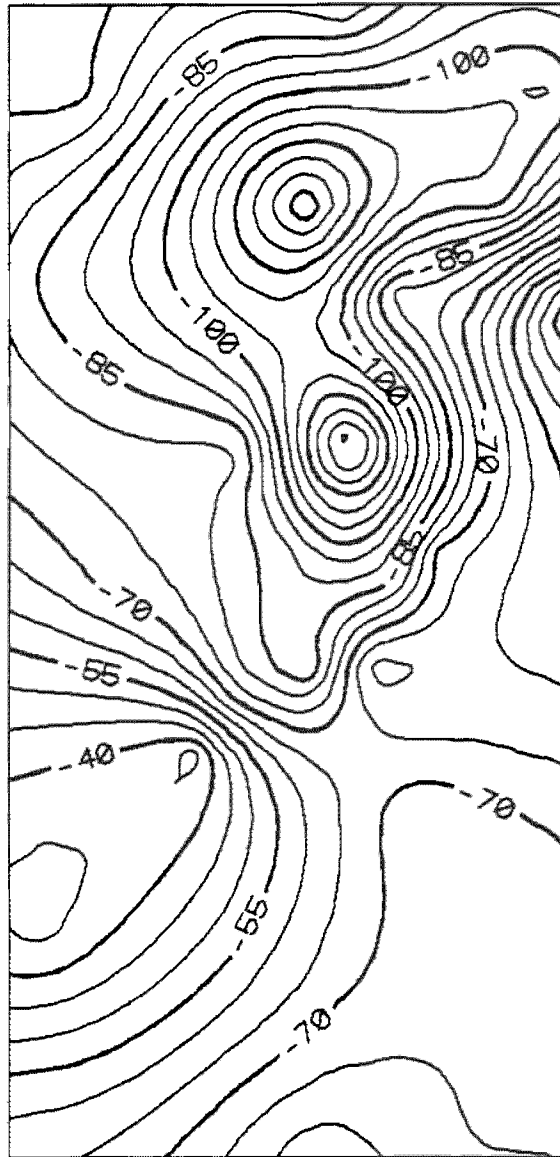
The change in water levels indicate how the 1990 water level has changed from the previous year, five years ago, 10 years ago and from the first year of well was measurement. Change in water levels from previous years are not meant to provide an indication of increasing or decreasing trends of the water table, but is rather a comparison of specific points in time. An absence of a value in one or more of these positions indicates no water level measurement for the particular time of comparison.

Mean Water Level

The final line of information for each well indicates the mean water level for the past 10 years. This value provides a means of comparison to the most recently measured water level.

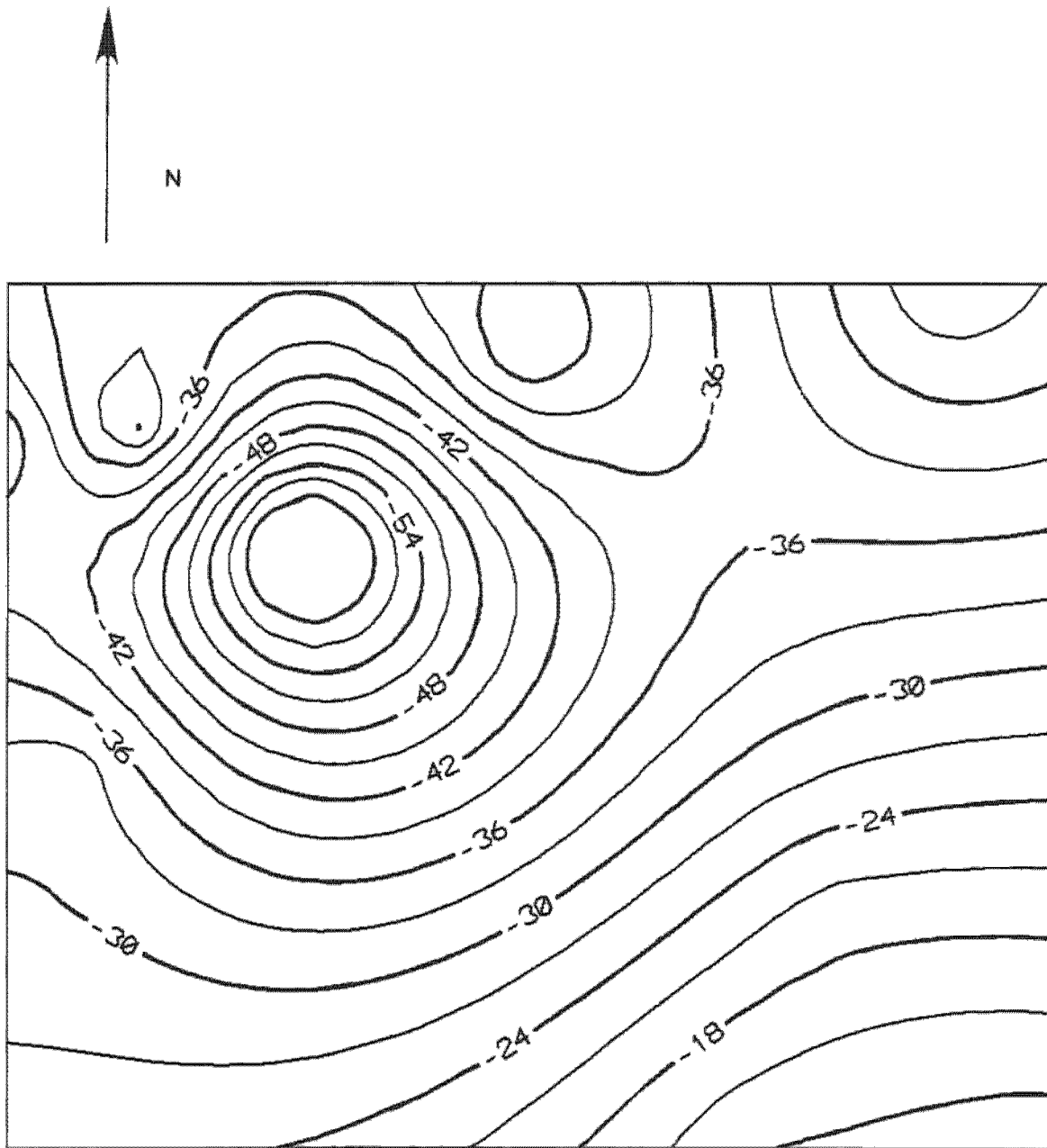
INDEX MAP SHOWING LOCATION OF MAPPED AREAS.





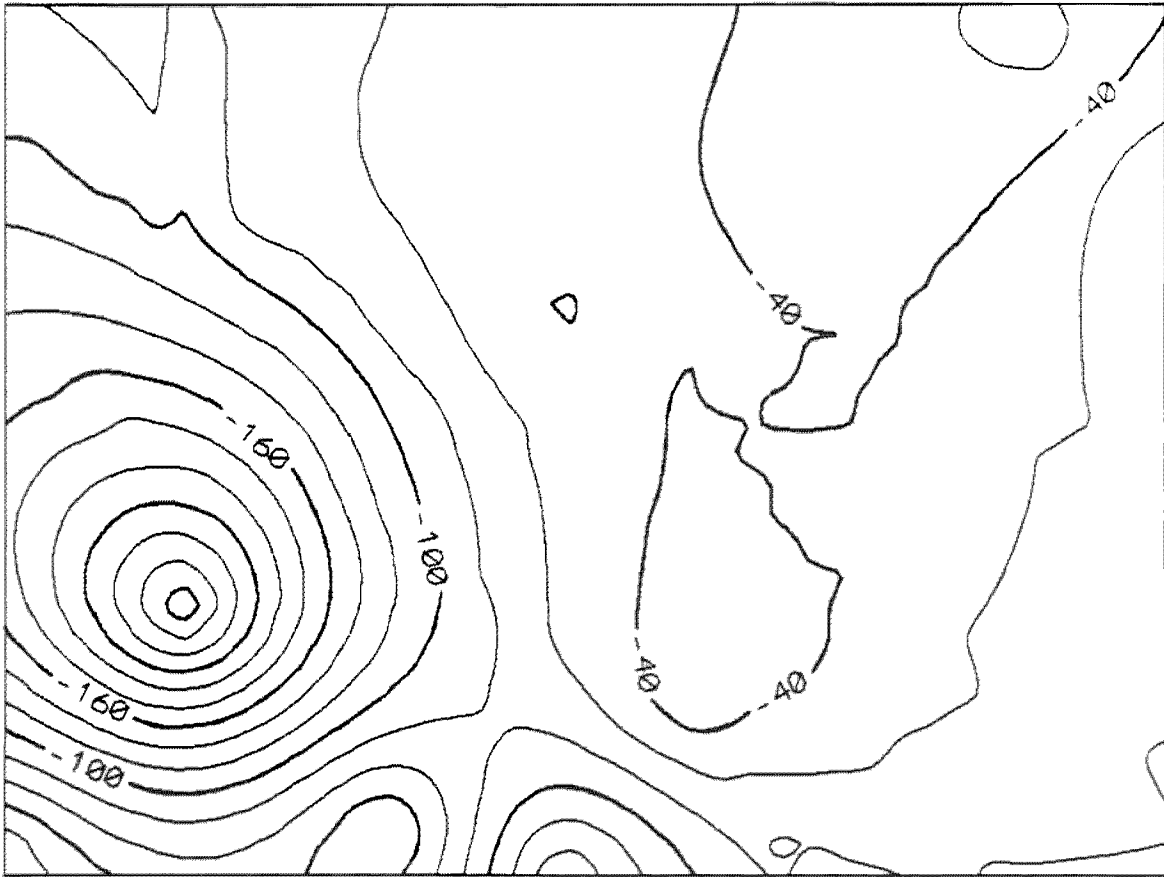
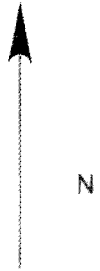
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Change in Water Level 1989 - 1990 for Caddo County and a Portion of Canadian County.



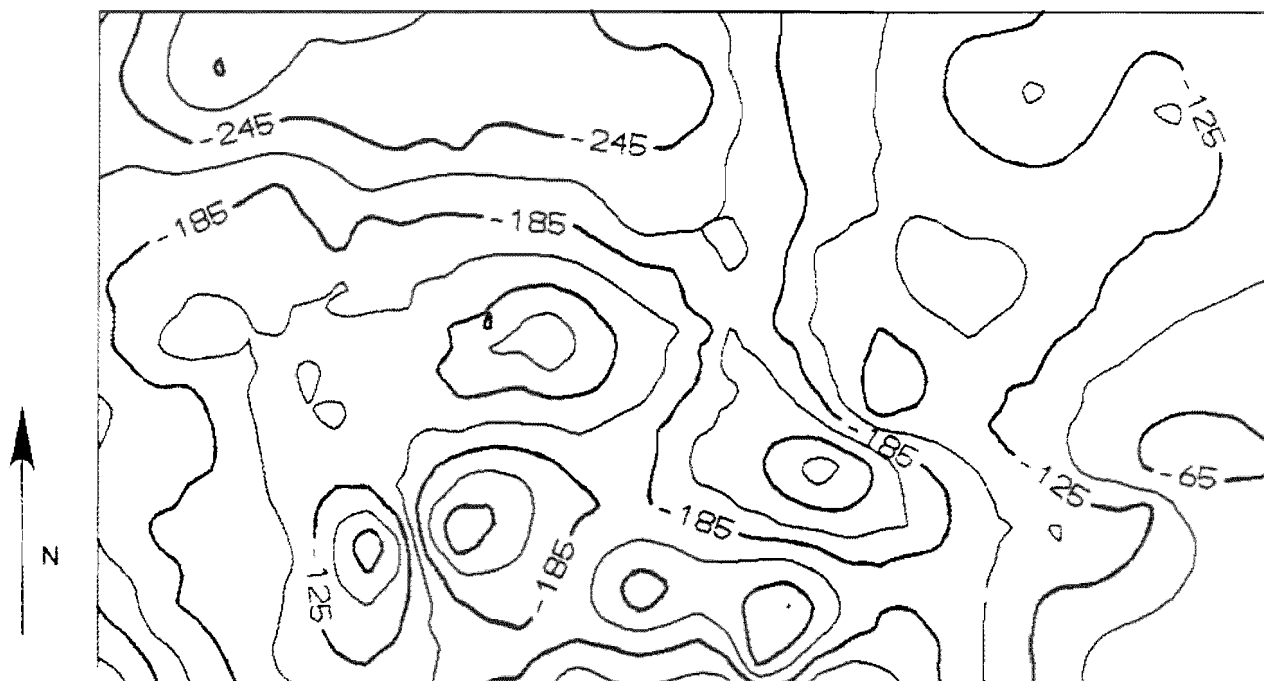
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Change in Water Level 1989 - 1990 for a Portion of Harmon County.



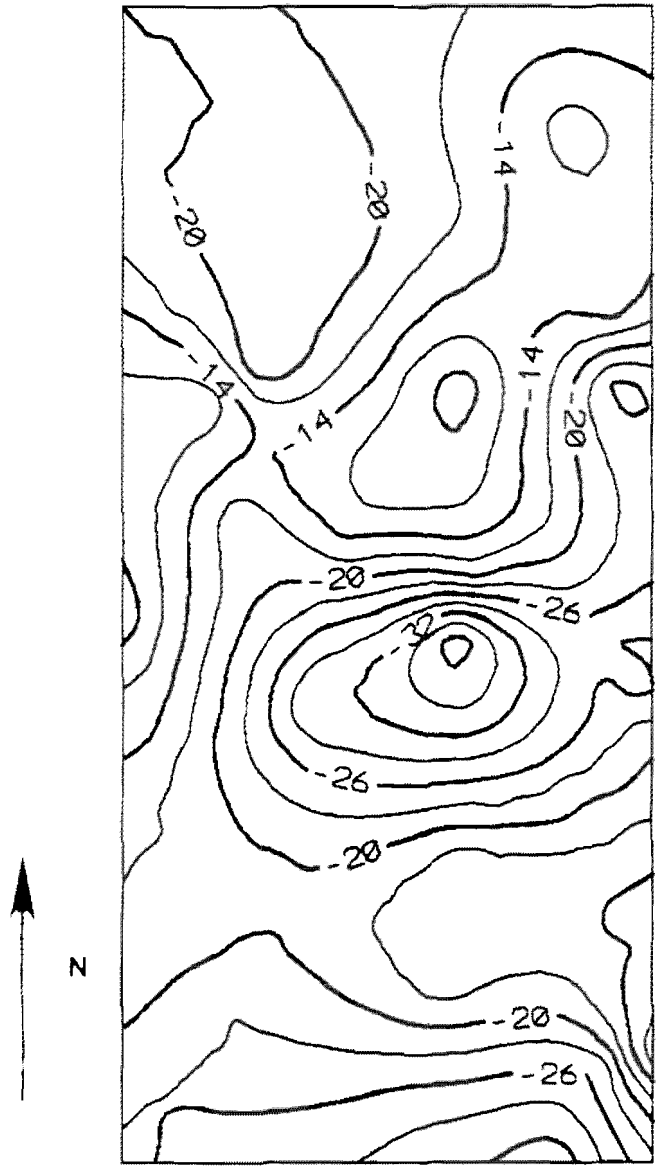
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Change in Water Level 1989 - 1990 for Oklahoma County.



Drawn by
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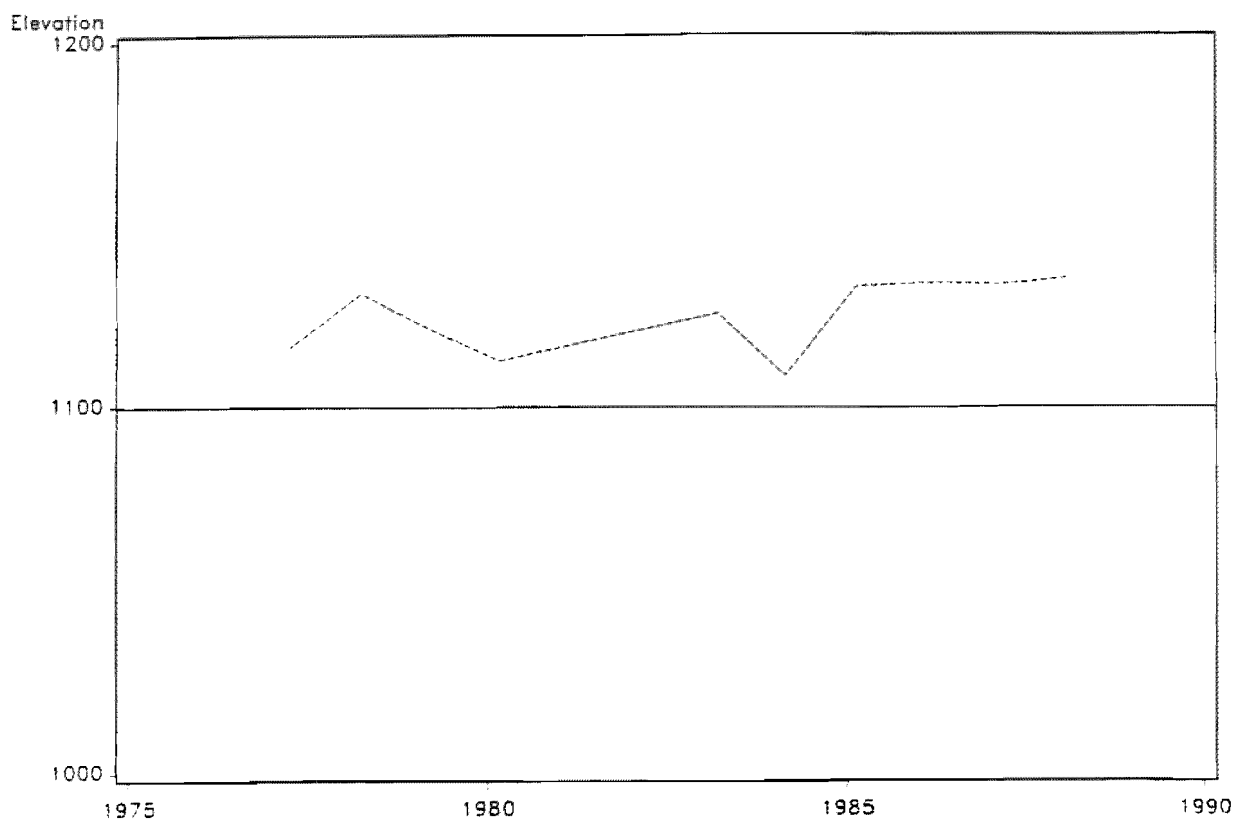
Change in Water Level 1989 - 1990 for Texas County.



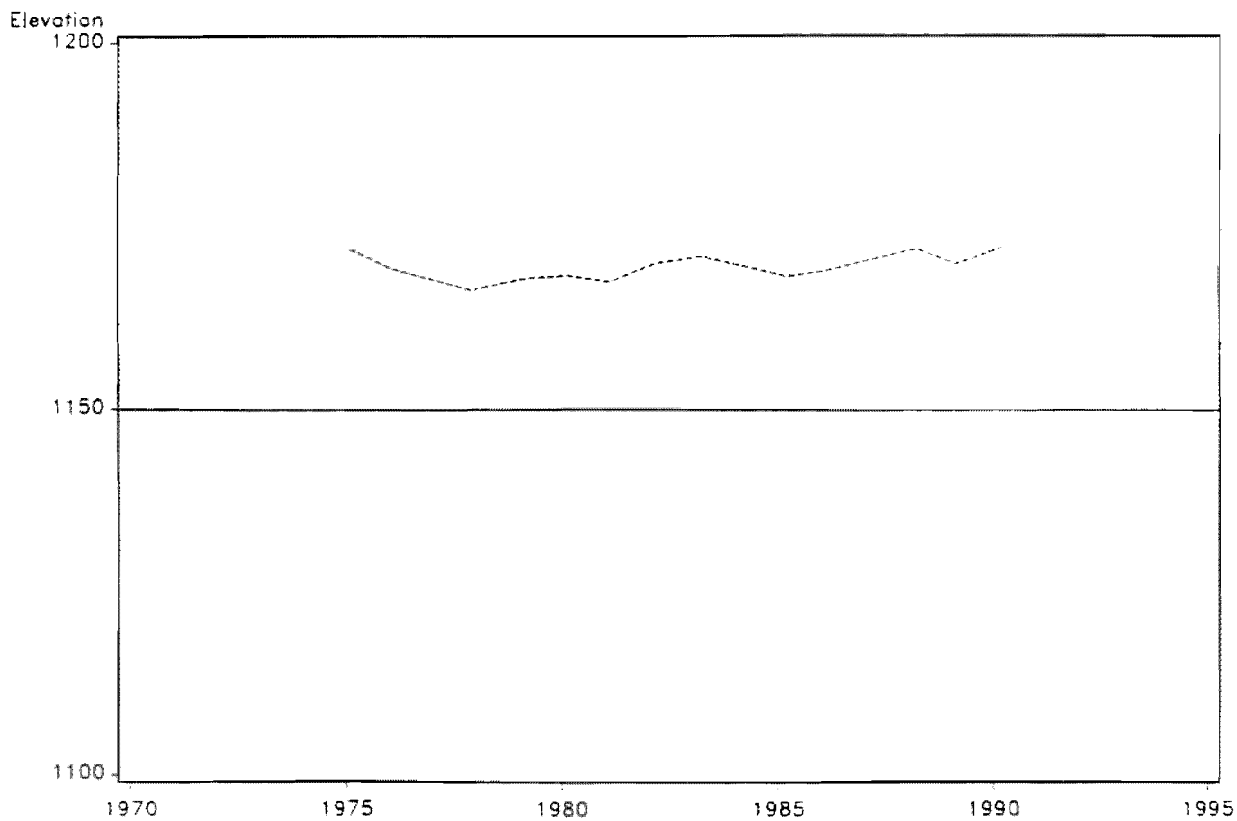
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Change in Water Level 1989 - 1990 for a Portion of Tillman County.

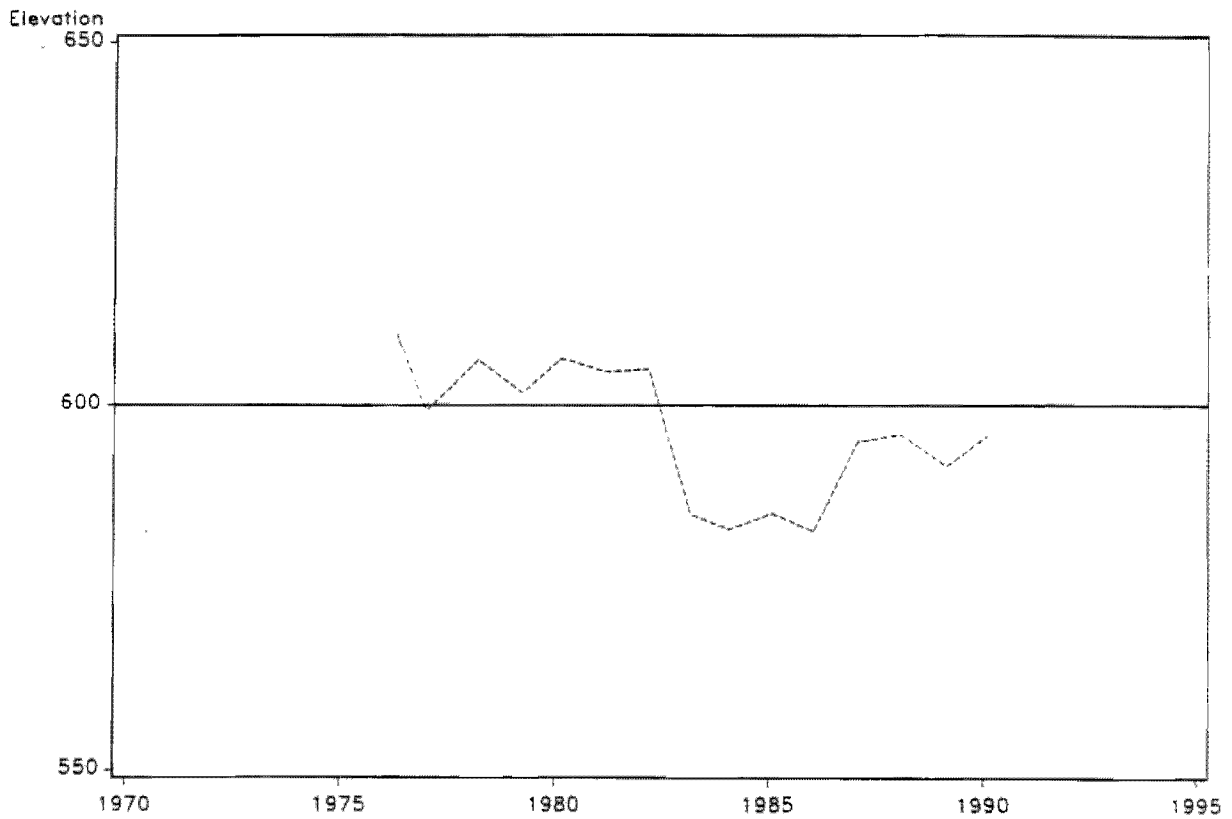
Water Level Elevations of an Adair County Well
SE NE NE 36 18N 25E1M



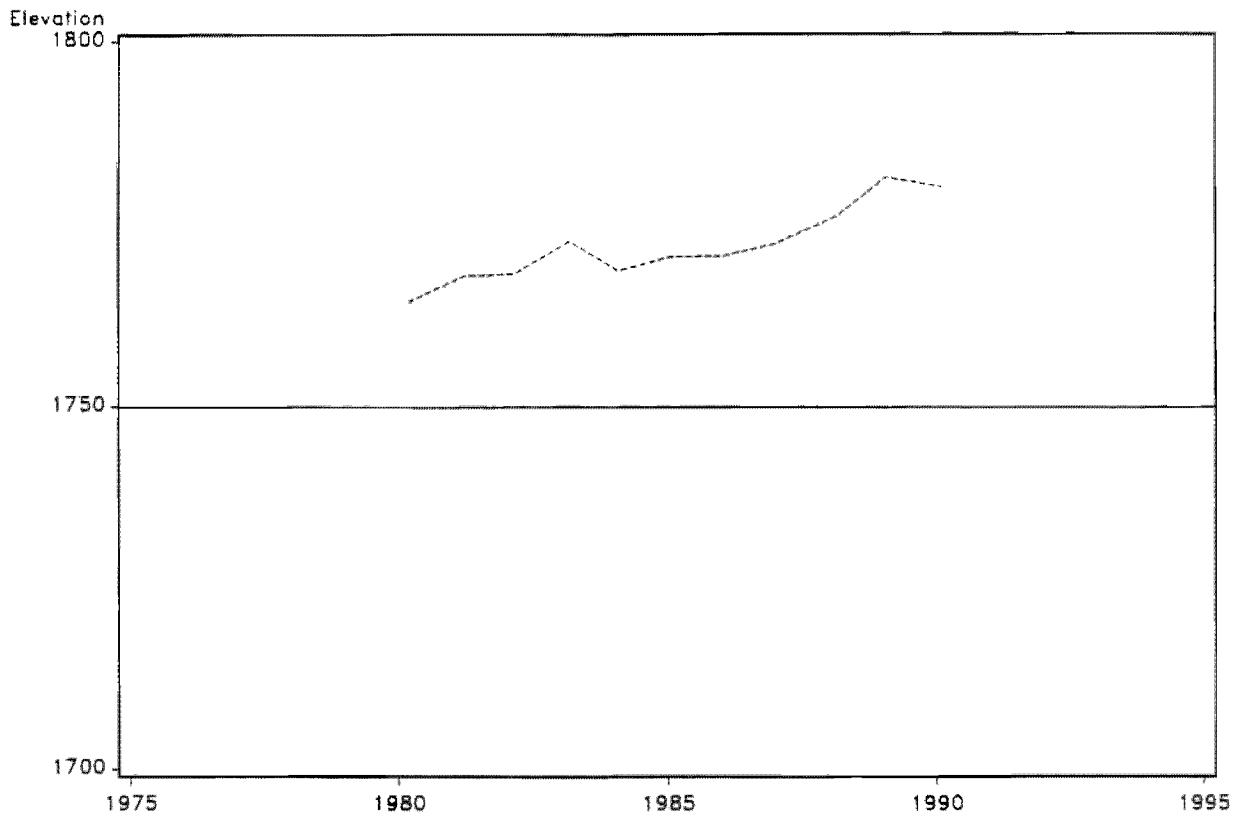
Water Level Elevations of an Alfalfa County Well
NW NW SE 14 27N 11W1M



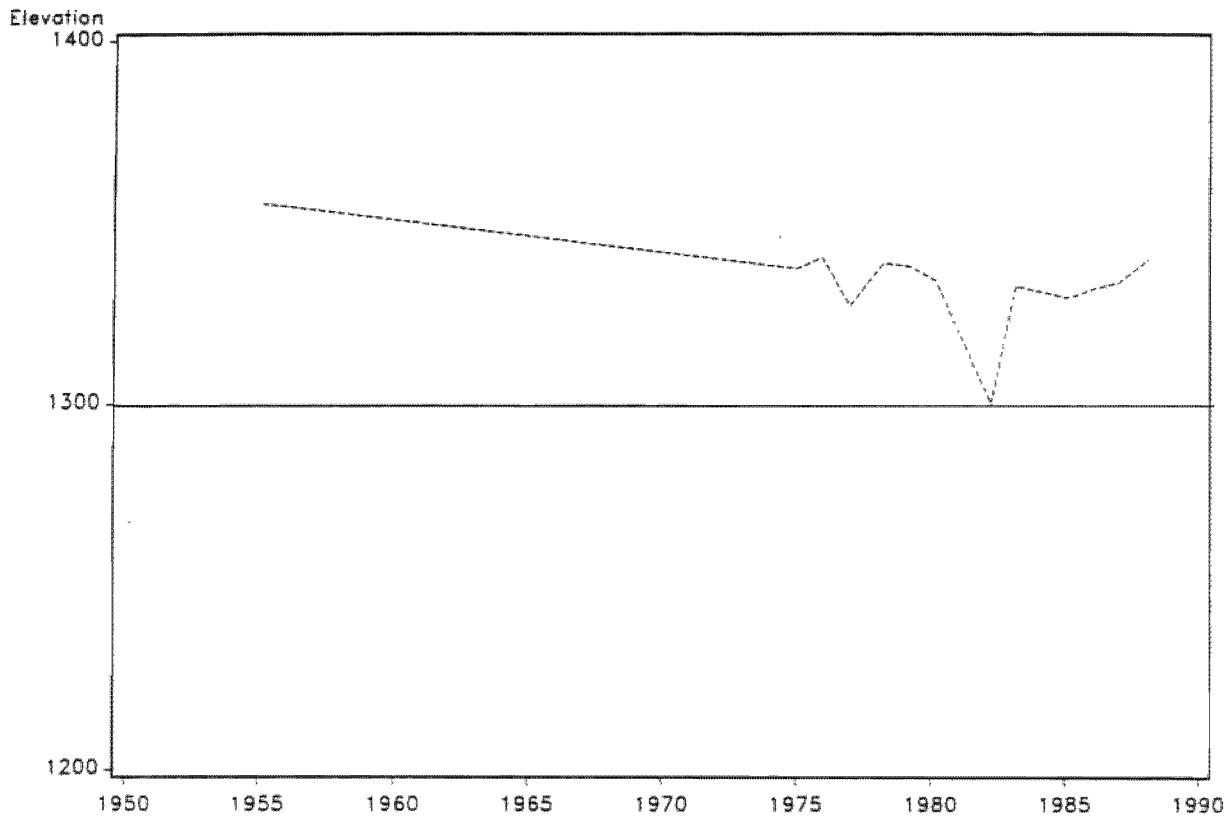
Water Level Elevations of an Atoka County Well
NE SW NE 04 03S 11E1M



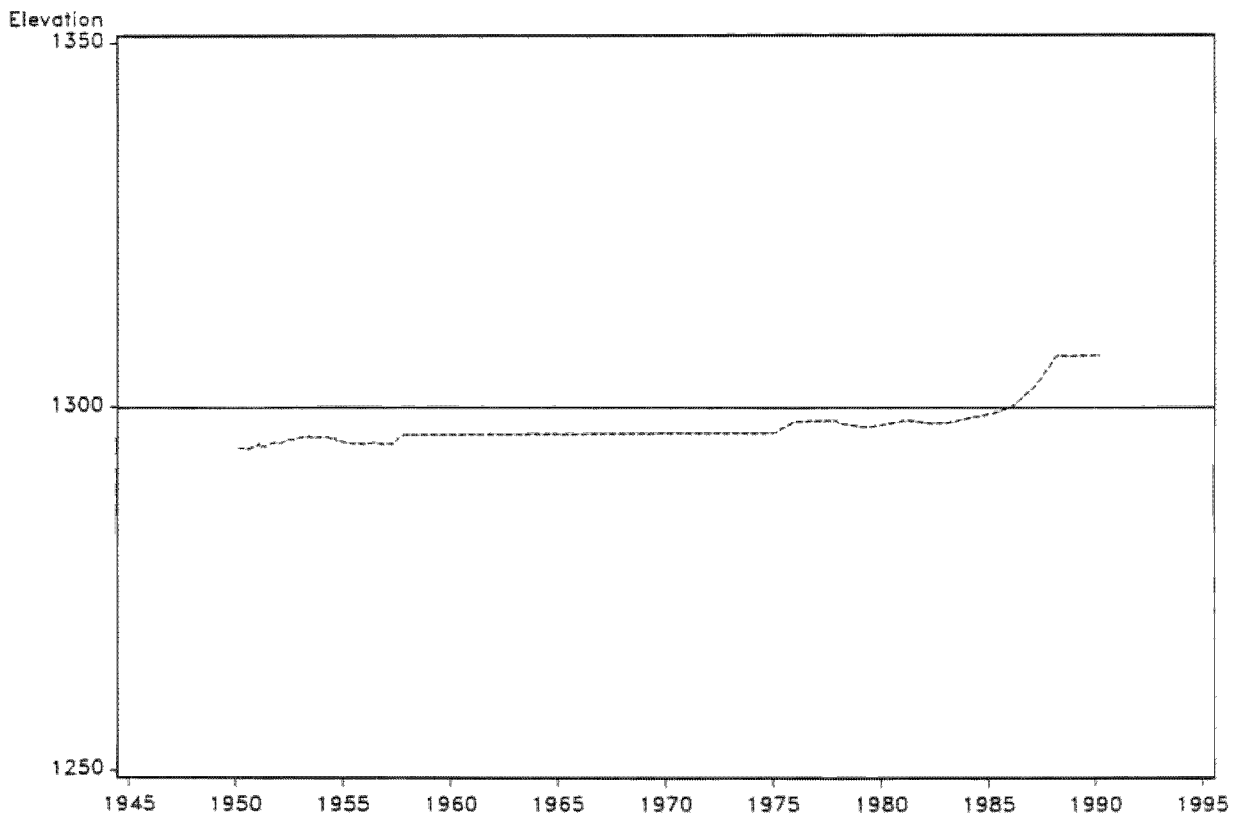
Water Level Elevations of a Beckham County Well
NE NE NW 23 09N 23W1M



Water Level Elevations of a Caddo County Well
SW NE SW 19 08N 11WIM

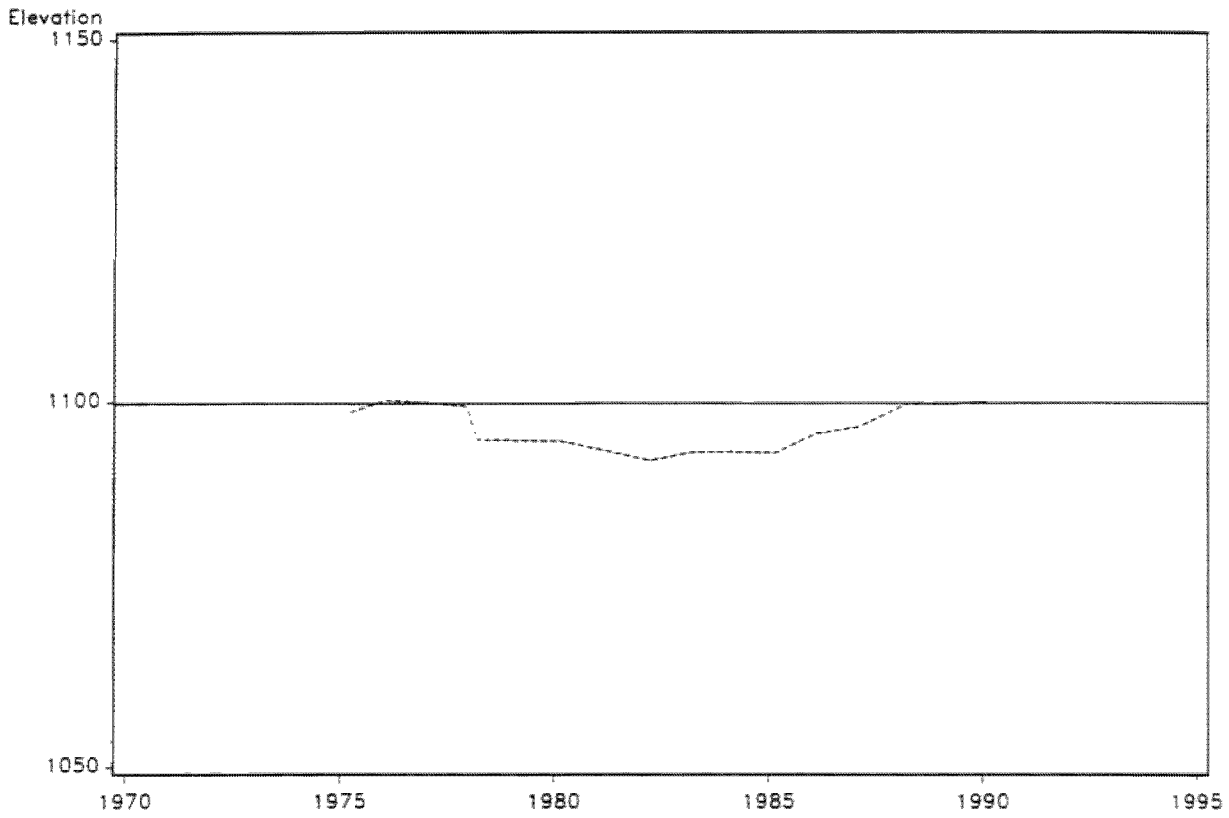


Water Level Elevations of a Garfield County Well
NW SW NW 27 23N 07WIM

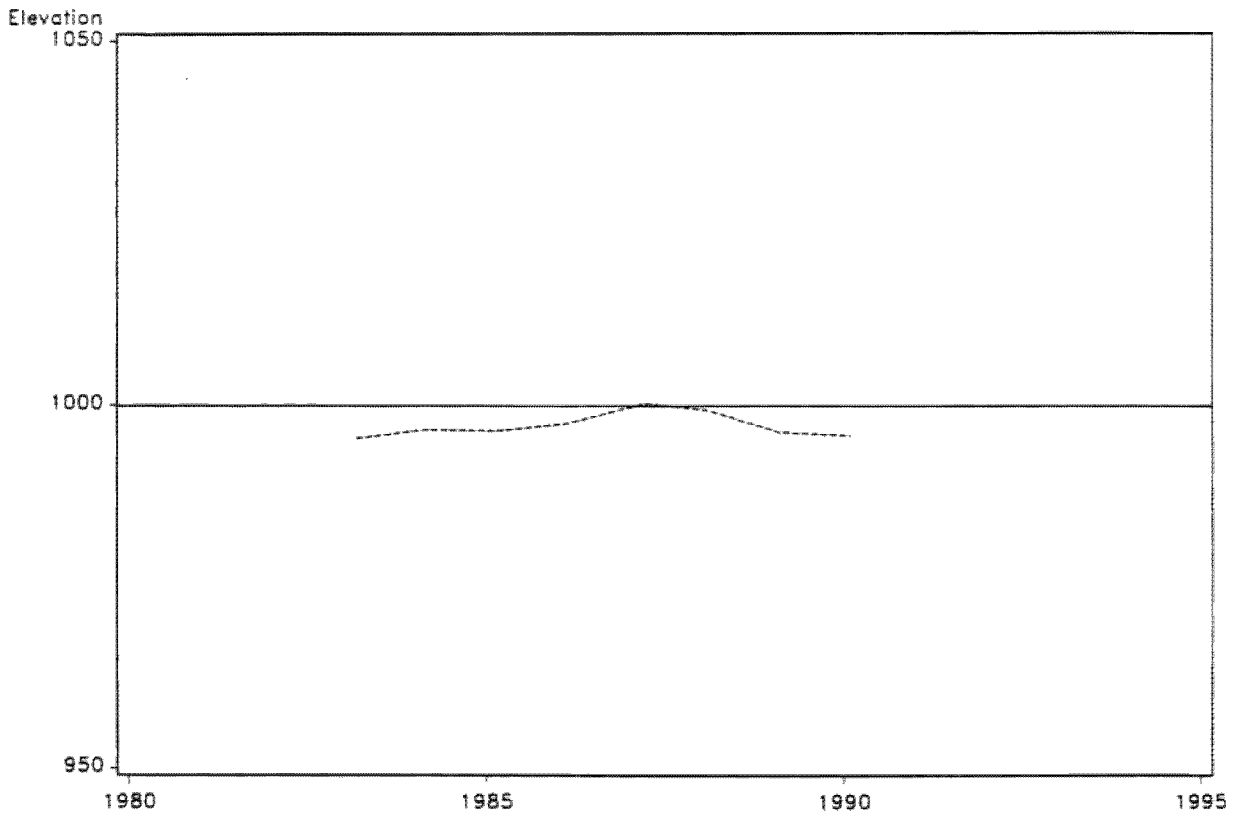


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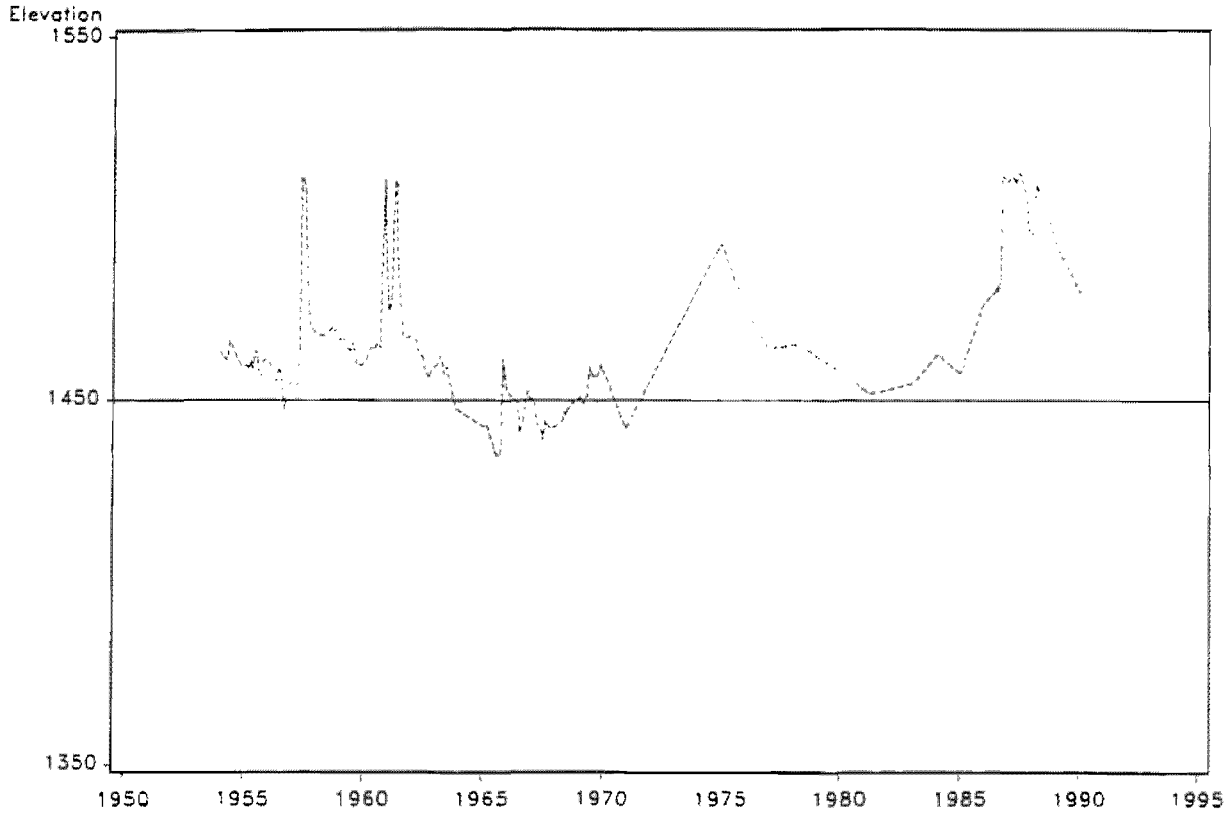
Water Level Elevations of a Garvin County Well
SE SE NE 03 04N 03E1M



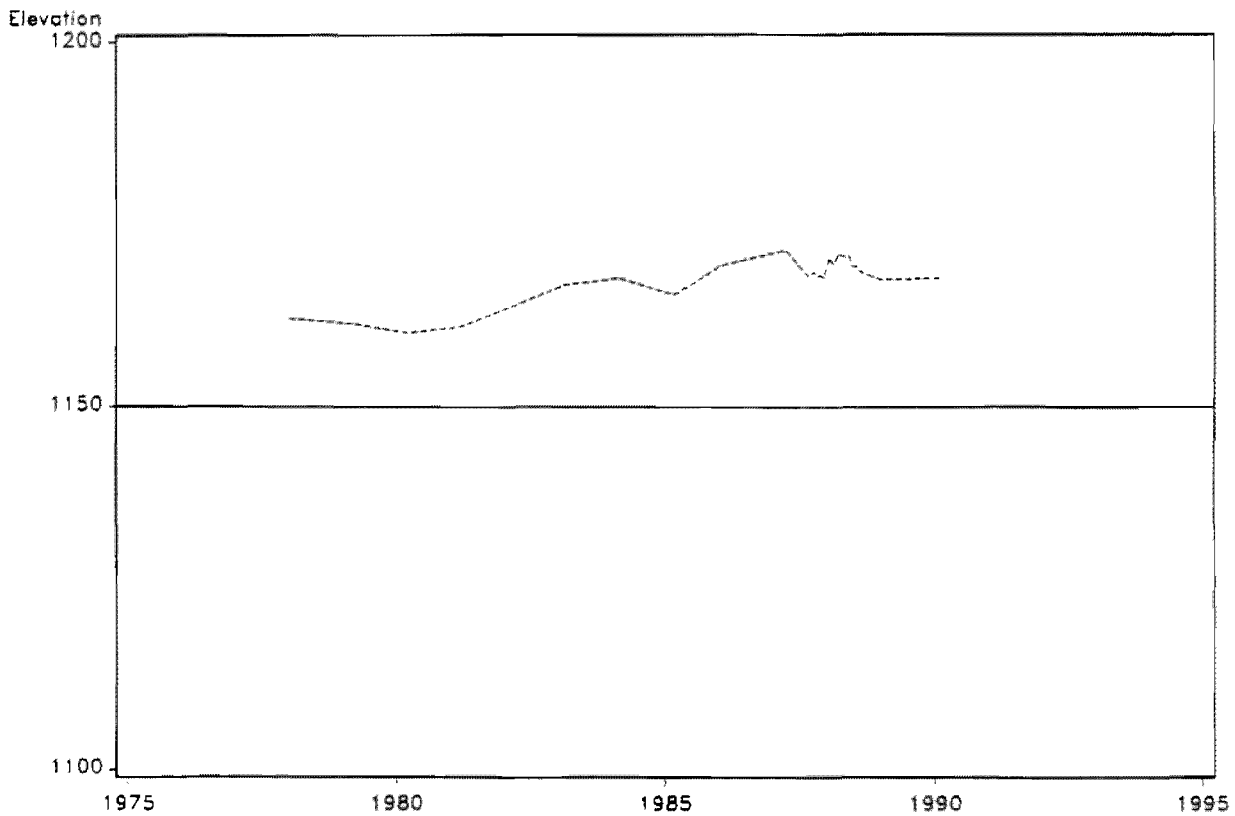
Water Level Elevations of a Grady County Well
NE NE NE 27 05N 05W1M



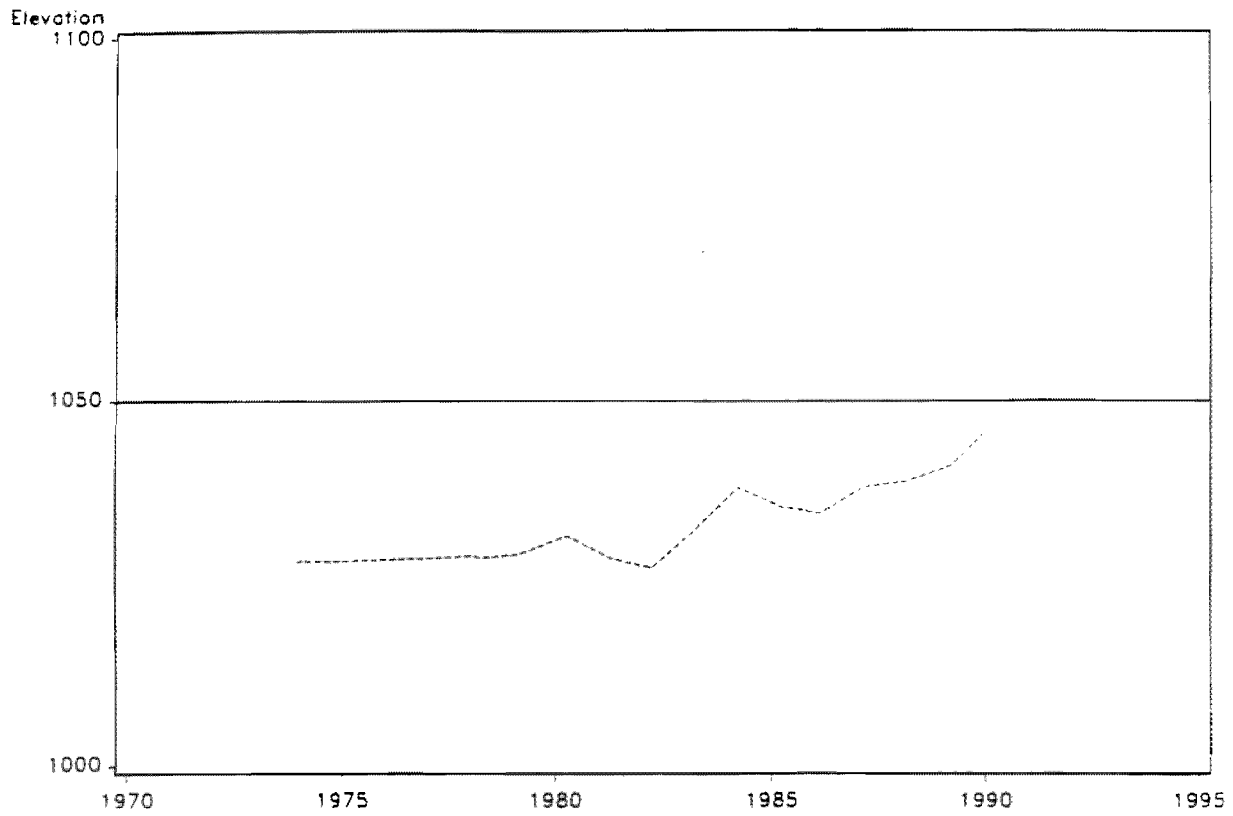
Water Level Elevations of a Harmon County Well
NE NE NE 29 03N 24WIM



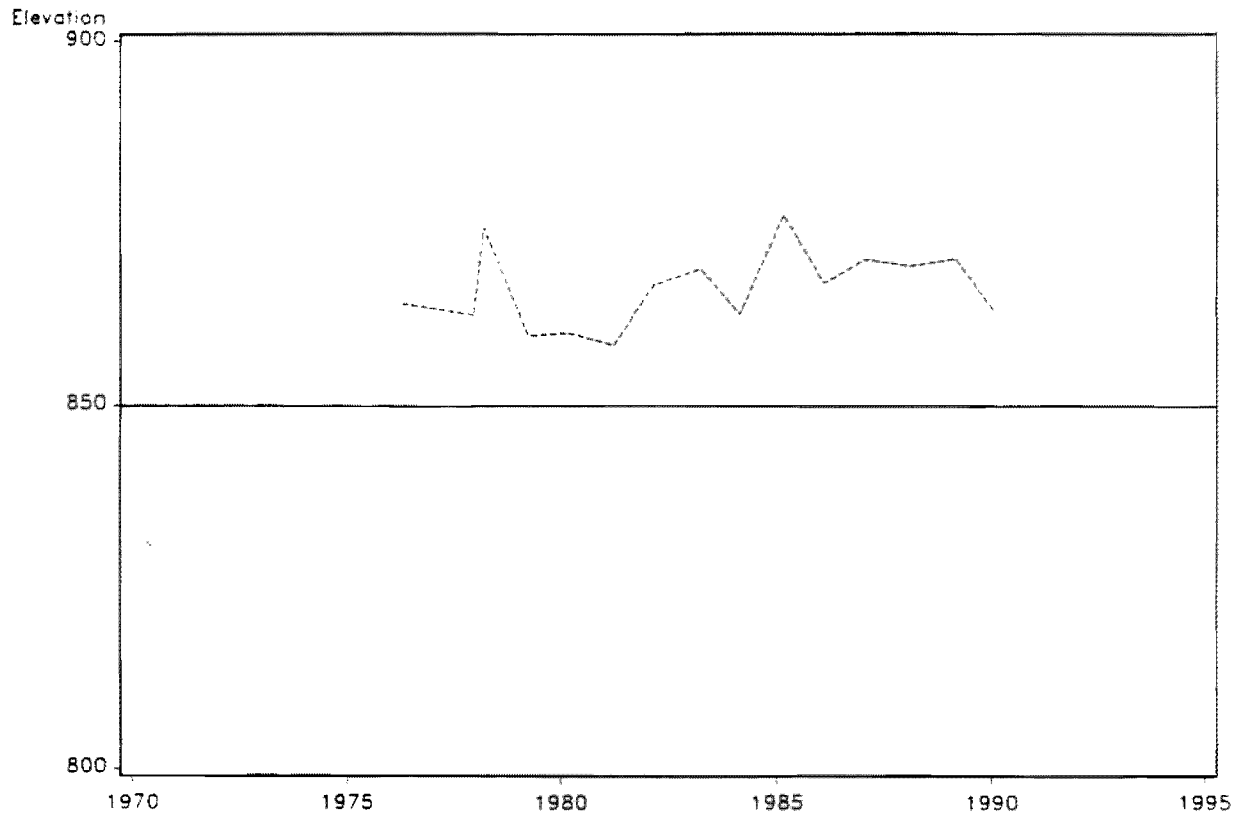
Water Level Elevations of a Major County Well
SW SW SW 05 20N 09WIM



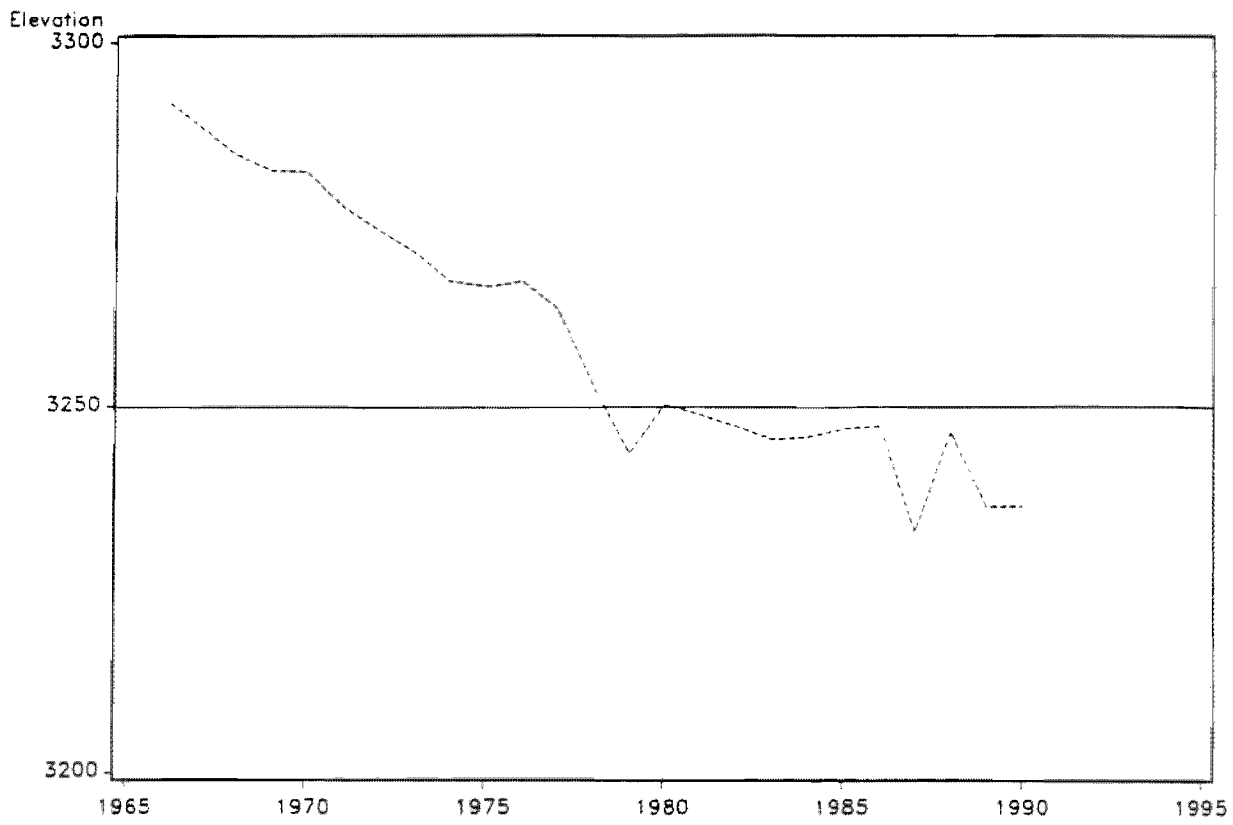
Water Level Elevations of an Oklahoma County Well
SE SE SE 30 14N 03WIM



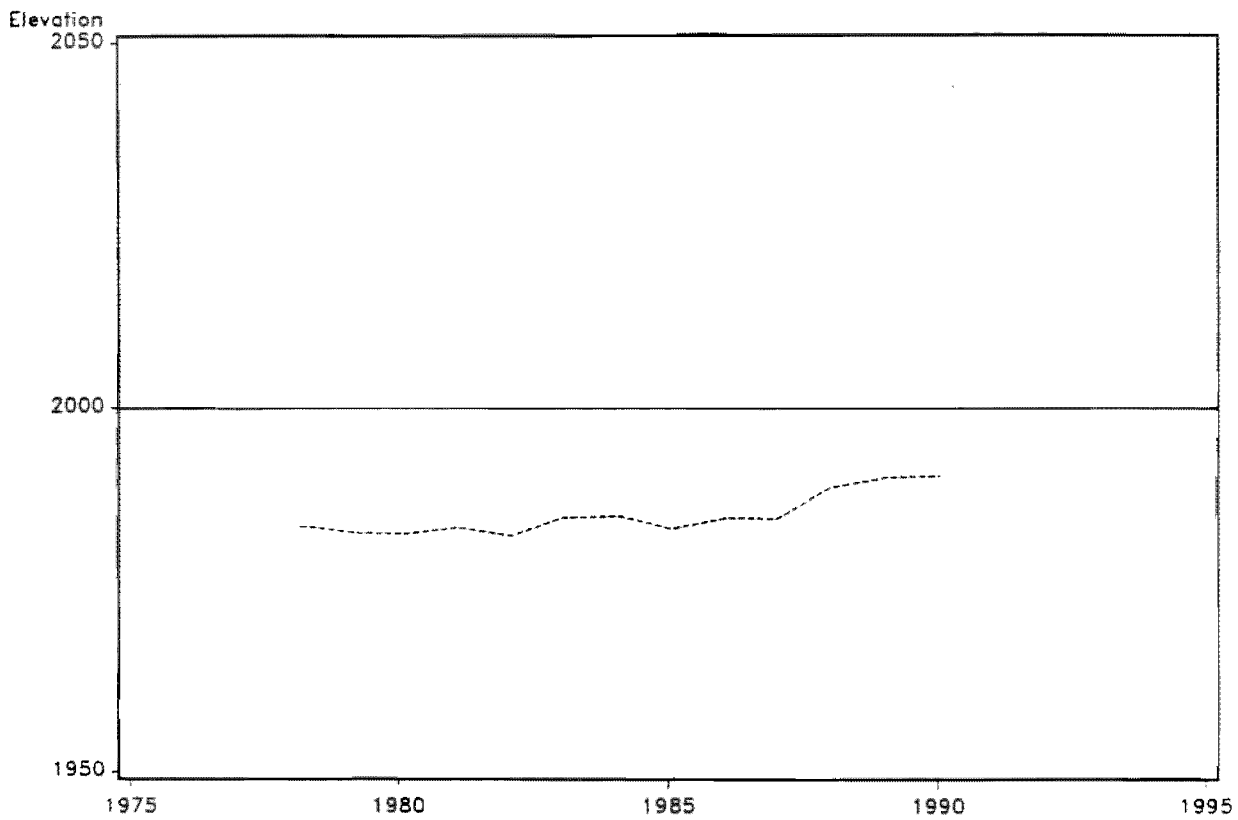
Water Level Elevations of a Seminole County Well
SE NE NE 16 11N 08EIM



Water Level Elevations of a Texas County Well
NW NW NW 16 05N 12ECM



Water Level Elevations of a Woodward County Well
SW SW SW 18 24N 20WIM



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ADAIR COUNTY

AQUIFER: BOONE FORMATION
LEGAL DESCRIPTION: NE NE NW 05 17N 26EIM
WELL USE: DOMESTIC OR HOUSEHOLD
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT):
PERIOD OF RECORD: 1979 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 7.20
MAXIMUM DEPTH TO WATER (FT): 24.23

WATER LEVEL SUMMARY

DATE: 01/17/90
WATER LEVEL (FT): 15.09 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): -0.34
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -3.07
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): 9.14
CHANGE IN WATER LEVEL SINCE 1979 (FT): -3.83

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 13.63

AQUIFER: BOONE FORMATION
LEGAL DESCRIPTION: SE SW SW 18 18N 26EIM
WELL USE: DOMESTIC OR HOUSEHOLD
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT):
PERIOD OF RECORD: 1990 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 26.95
MAXIMUM DEPTH TO WATER (FT): 26.95

WATER LEVEL SUMMARY

DATE: 03/05/90
WATER LEVEL (FT): 26.95 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT):
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT):
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT):
CHANGE IN WATER LEVEL SINCE 1990 (FT): 0.00

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 26.95

ADAIR COUNTY (CONTINUED)

AQUIFER: BOONE FORMATION
LEGAL DESCRIPTION: NE NE NW 32 18N 26EIM
WELL USE: DOMESTIC OR HOUSEHOLD
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT): 100
PERIOD OF RECORD: 1982 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 25.90
MAXIMUM DEPTH TO WATER (FT): 47.70

WATER LEVEL SUMMARY

DATE: 01/17/90

WATER LEVEL (FT): 45.40 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): 0.25
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -13.85
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT):
CHANGE IN WATER LEVEL SINCE 1982 (FT): -12.41

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 38.98

AQUIFER: PITKIN LIMESTONE
LEGAL DESCRIPTION: NE SW SW 09 17N 26WIM
WELL USE: DOMESTIC OR HOUSEHOLD
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT): 140
PERIOD OF RECORD: 1979 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 44.30
MAXIMUM DEPTH TO WATER (FT): 61.46

WATER LEVEL SUMMARY

DATE: 01/17/90

WATER LEVEL (FT): 61.46 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): -2.41
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -10.56
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT):
CHANGE IN WATER LEVEL SINCE 1979 (FT): -8.64

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 54.93

ALFALFA COUNTY

AQUIFER: A & T DEPOSITS OF SALT FORK OF THE ARKANSAS RIVER
LEGAL DESCRIPTION: NE NW NW 09 27N 09WIM
WELL USE: INDUSTRIAL
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT): 31.0
PERIOD OF RECORD: 1975 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 2.65
MAXIMUM DEPTH TO WATER (FT): 10.40

WATER LEVEL SUMMARY

DATE: 03/31/90
WATER LEVEL (FT): 4.20 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): -0.55
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -1.55
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): -1.22
CHANGE IN WATER LEVEL SINCE 1975 (FT): -0.53

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 4.25

AQUIFER: A & T DEPOSITS OF THE CIMARRON RIVER
LEGAL DESCRIPTION: NW NW SW 06 23N 11WIM
WELL USE: UNUSED
ELEVATION OF LAND SURFACE (FT): 1335
TOTAL DEPTH OF WELL (FT): 25.0
PERIOD OF RECORD: 1983 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 6.24
MAXIMUM DEPTH TO WATER (FT): 10.65

WATER LEVEL SUMMARY

DATE: 03/31/90
WATER LEVEL (FT): 8.74 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): 1.68
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): 0.24
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT):
CHANGE IN WATER LEVEL SINCE 1983 (FT): -1.34

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 8.75

ALFALFA COUNTY (CONTINUED)

AQUIFER: A & T DEPOSITS OF THE CIMARRON RIVER
LEGAL DESCRIPTION: SE SW SW 16 25N 11WIM
WELL USE: UNUSED
ELEVATION OF LAND SURFACE (FT): 1250
TOTAL DEPTH OF WELL (FT): 86.0
PERIOD OF RECORD: 1975 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 0.41
MAXIMUM DEPTH TO WATER (FT): 8.25

WATER LEVEL SUMMARY

DATE: 03/31/90
WATER LEVEL (FT): 0.41 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): 6.01
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): 4.38
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): 4.44
CHANGE IN WATER LEVEL SINCE 1975 (FT): 6.66

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 4.22

AQUIFER: A & T DEPOSITS OF SALT FORK OF THE ARKANSAS RIVER
LEGAL DESCRIPTION: NW NW SE 14 27N 11WIM
WELL USE: IRRIGATION
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT): 37.0
PERIOD OF RECORD: 1975 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 4.69
MAXIMUM DEPTH TO WATER (FT): 10.73

WATER LEVEL SUMMARY

DATE: 03/13/90
WATER LEVEL (FT): 4.69 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): 2.31
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): 4.01
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): 3.89
CHANGE IN WATER LEVEL SINCE 1975 (FT): 0.31

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 5.53

ALFALFA COUNTY (CONTINUED)

AQUIFER: A & T DEPOSITS OF SALT FORK OF THE ARKANSAS RIVER
LEGAL DESCRIPTION: SE NW NE 23 27N 11WIM
WELL USE: IRRIGATION
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT): 41.0
PERIOD OF RECORD: 1975 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 5.52
MAXIMUM DEPTH TO WATER (FT): 12.45

WATER LEVEL SUMMARY

DATE: 02/09/90

WATER LEVEL (FT): 9.60 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT):
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -1.30
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): 0.28
CHANGE IN WATER LEVEL SINCE 1975 (FT): 0.12

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 7.34

ATOKA COUNTY

AQUIFER: ANTLERS SANDSTONE
LEGAL DESCRIPTION: NE SW NE 04 03S 11EIM
WELL USE: PUBLIC SUPPLY
ELEVATION OF LAND SURFACE (FT):
TOTAL DEPTH OF WELL (FT): 73.0
PERIOD OF RECORD: 1976 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 30.00
MAXIMUM DEPTH TO WATER (FT): 57.26

WATER LEVEL SUMMARY

DATE: 01/31/90

WATER LEVEL (FT): 44.14 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): 4.23
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): 10.58
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): -10.59
CHANGE IN WATER LEVEL SINCE 1976 (FT): -14.14

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 45.52

BEAVER COUNTY

AQUIFER: OGALLALA FORMATION
LEGAL DESCRIPTION: SE NE SW 22 04N 20ECM
WELL USE: IRRIGATION
ELEVATION OF LAND SURFACE (FT): 2732.00
TOTAL DEPTH OF WELL (FT): 330
PERIOD OF RECORD: 1967 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 112.43
MAXIMUM DEPTH TO WATER (FT): 122.96

WATER LEVEL SUMMARY

DATE: 01/09/90
WATER LEVEL (FT): 122.96 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): -0.57
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -0.98
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): -2.57
CHANGE IN WATER LEVEL SINCE 1967 (FT): -7.53

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 122.53

AQUIFER: OGALLALA FORMATION
LEGAL DESCRIPTION: SW SW SE 02 05N 20ECM
WELL USE: IRRIGATION
ELEVATION OF LAND SURFACE (FT): 2773.00
TOTAL DEPTH OF WELL (FT): 575
PERIOD OF RECORD: 1968 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 140.90
MAXIMUM DEPTH TO WATER (FT): 162.37

WATER LEVEL SUMMARY

DATE: 01/09/90
WATER LEVEL (FT): 158.40 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): 1.80
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -2.42
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT):
CHANGE IN WATER LEVEL SINCE 1968 (FT): -13.45

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 158.10

BEAVER COUNTY (CONTINUED)

AQUIFER: OGALLALA FORMATION
LEGAL DESCRIPTION: SW SW SW 28 05N 20ECM
WELL USE: IRRIGATION
ELEVATION OF LAND SURFACE (FT): 2760
TOTAL DEPTH OF WELL (FT): 503
PERIOD OF RECORD: 1968 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 119.75
MAXIMUM DEPTH TO WATER (FT): 147.14

WATER LEVEL SUMMARY

DATE: 01/09/90

WATER LEVEL (FT): 144.96 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT): 2.18
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): -3.28
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT): -6.37
CHANGE IN WATER LEVEL SINCE 1968 (FT): -25.21

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 144.29

AQUIFER: OGALLALA FORMATION
LEGAL DESCRIPTION: SW SW SE 35 06N 20ECM
WELL USE: IRRIGATION
ELEVATION OF LAND SURFACE (FT): 2784
TOTAL DEPTH OF WELL (FT): 556
PERIOD OF RECORD: 1967 TO PRESENT
MINIMUM DEPTH TO WATER (FT): 144.60
MAXIMUM DEPTH TO WATER (FT): 161.67

WATER LEVEL SUMMARY

DATE: 01/09/90

WATER LEVEL (FT): 159.86 SITE STATUS CODE:

CHANGE IN WATER LEVEL FROM PREVIOUS YEAR (FT):
CHANGE IN WATER LEVEL FROM 5 YEARS AGO (FT): 1.81
CHANGE IN WATER LEVEL FROM 10 YEARS AGO (FT):
CHANGE IN WATER LEVEL SINCE 1967 (FT): -2.55

MEAN WATER LEVEL FOR PAST 10 YEARS (FT): 158.96

