

Annual Engineer's Report - 2004



*Yolo County Flood
Control & Water
Conservation District*

Woodland, California

September 2004

WOOD RODGERS

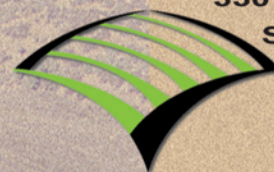
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3301 C Street, Bldg 100-B

Sacramento, CA 95816

Tel: 916.341.7760

Fax: 916.341.7767





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HAND DELIVERED

October 4, 2005

Mr. Tim O'Halloran, General Manager
Yolo County Flood Control & Water
Conservation District
34274 State Highway 16
Woodland, California 95695

Dear Mr. O'Halloran:

Subject: Yolo County Flood Control & Water Conservation District (8108.001) – Annual Engineer's Report (2004)

Enclosed is the Annual Engineer's Report for 2004, which was prepared by Wood Rodgers, Inc., for the Yolo County Flood Control & Water Conservation District (District). This report summarizes the District's overall groundwater condition. It does not address other water management activities of the District as done in previous annual reports.

Wood Rodgers appreciates the opportunity to participate in the District's water resources program.

Respectfully submitted,

Francis E. Borcalli, P.E.
Water Resources Department Manager

Enclosure (10)

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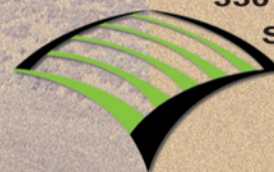


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- 1 Well Location Map
- 2 Groundwater Contours – Spring 2004

I. INTRODUCTION

This Annual Engineer’s Report, prepared by Wood Rodgers, Inc., summarizes the groundwater situation within the Yolo County Flood Control & Water Conservation District (District) in 2004. This report is prepared fulfillment of provisions of the Act of the Legislature in establishing the District.

II. GROUNDWATER SITUATION

The groundwater conditions within the District are reviewed from the standpoint of the level or elevation of groundwater and quality. Only recently, as a result of the District preparing its Groundwater Monitoring and Data Information Program, is information on the quality of groundwater outside the urban areas readily available. This information will continue to be available on a regular basis in the future through the implementation of the District’s groundwater monitoring program. This program is being implemented by the District in collaboration with other agencies in Yolo County and federal and state agencies as well.

Shown on Map 1 is the location of groundwater monitoring wells for which data was available through the District’s Water Resources Information Database (WRID) and/or DWR’s groundwater database. Efforts are in progress between the District and DWR to coordinate the data gathering, compilation, and accessibility to the data within the respective databases.

Noted on Map 1 are monitoring wells for which water level data is obtained on a monthly basis. It is important to note that the monitoring of wells in the Capay Valley on a monthly basis was initiated by the District in Fall 2004 in response to expressed concerns of citizens in the Capay Valley regarding potential adverse impacts to groundwater as a result of the Cache Creek Casino and associated development.

A. Groundwater Level Hydrographs

Groundwater hydrographs for 13 monitoring wells are presented on Figure 1 through Figure 13. The wells for which hydrographs are presented were selected on the basis of

the history of data for the particular well and its geographic location to provide a general representation of groundwater conditions throughout the District.

Three of the monitoring wells (Figure 1-Figure 3) within the Capay Valley area show the history of water levels for a period of from 20 to 50 years. These wells show an overall fluctuation of groundwater ranging from about 20 to 30 feet in response to wet and dry periods and provide a basis for identifying significant changes in the groundwater in the Capay Valley. The long-term trend represents a relatively stable groundwater condition.

From a review of data from the other monitoring wells within the District but outside of the Capay Valley, the overall fluctuation in the groundwater levels range from 35 to 100 feet over the last 40 to 50 years in response to wet and dry periods. In general, the extent of groundwater extraction as indicated by the seasonal fluctuation has not changed appreciably throughout the District. In the Hungry Hollow area, as represented by Well No. 10N/01W-05E01 (Figure 4), the seasonal groundwater extraction appears to have been reduced since the operation of Indian Valley Dam and Reservoir.

B. Groundwater Contours

Groundwater contours are used to represent the general groundwater elevations and directions of flow. A groundwater contour map (Map 20 was prepared using the data available from the network of monitoring wells throughout Yolo County and part of Solano County). Overall the groundwater levels and directions of flow are consistent with conditions shown for previous years.

C. Groundwater Quality

An extensive compilation and evaluation of available groundwater quality data was compiled by Luhdorff & Scalmanini Consulting Engineers (LSCE) in preparing the District’s groundwater monitoring program. In addition, baseline water quality samples were tested for wells identified for the District’s groundwater quality monitoring program. The results of the LSCE’s evaluation of groundwater quality are summarized in Section III.

III. SUMMARY

In summary the groundwater conditions within the District are as follows:

- No adverse conditions or changes are apparent in the review of the available data with respect to groundwater levels.
- Water quality in Yolo County is generally acceptable; although, elevated EX, nitrates, and boron are present in some areas.
- Yolo County has a trend of increasing EC and nitrates, especially in shallow wells. Current EC data, while limited, indicate a significant increase in EC in the Lower Cache-Putah Subbasin (on the order of more than 400 umhos/cm over a period of 30 years). An increase of approximately 150 umhos/cm is estimated for the intermediate zone in the Davis area over the last 30 years.
- The average boron concentrations are the highest in the Capay Valley, and elevated levels are exhibited along Cache Creek and particularly in the Lower Cache-Putah Subbasin. The average boron concentrations in the shallow zone in the Lower Cache-Putah Subbasin are notably elevated relative to the Western Yolo Subbasin. Average boron concentrations are elevated in the intermediate zone of the Western Yolo Subbasin; however, the Lower Cache-Putah Subbasin values are generally higher. Historical records indicate that boron concentrations in the shallow and intermediate zones are for the most part stable. At a few locations, small changes may be occurring, but the limited data hamper any clear indications of change. It is, however, clear that EC and nitrate trends are much more pronounced than changes that may be occurring related to boron.
- Pesticides and Volatile Organic Compounds (VOCs) were not detected during the March 2004 baseline sampling event.

- Hexavalent chromium is a naturally occurring constituent of concern in Yolo County that currently does not have an MCL. The MCL for total chromium is 50 ug/L. Two wells tested for hexavalent chromium either met or exceeded the MCL for total chromium (50 and 54 ug/L) and many wells tested for hexavalent chromium exceeded the detection limit.

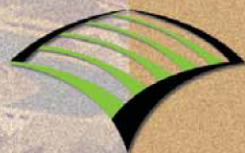
- Arsenic, mercury, and selenium were targeted as possible constituents of concern in Yolo County. Wells tested after 1999 showed a limited number of wells that exceeded the MCL: arsenic (1), mercury (0), and selenium (3).

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Figures



Figures

FIGURE 1

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 11N/03W-23N01

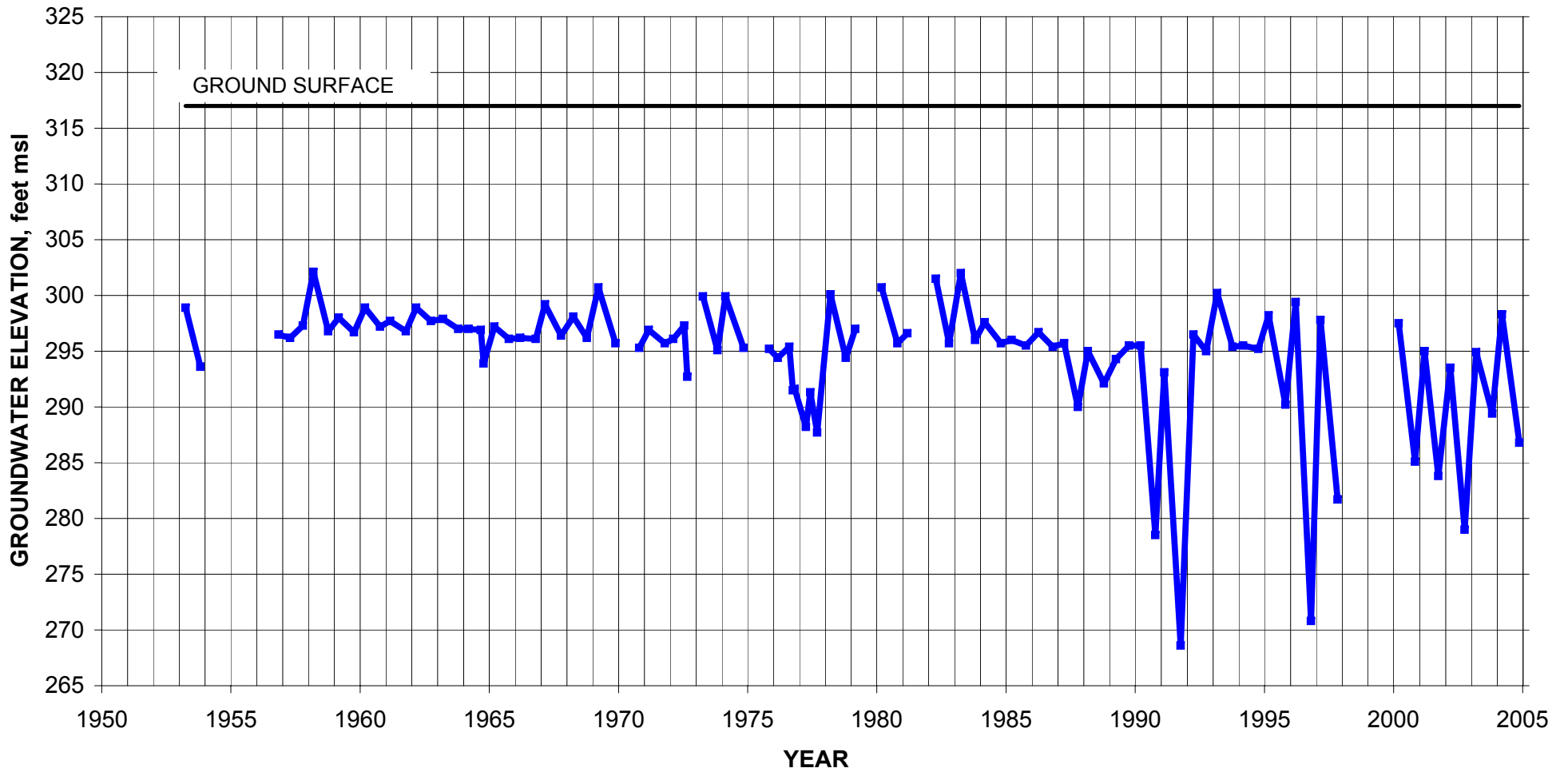


FIGURE 2

YOLO COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

GROUNDWATER HYDROGRAPHS

WELL NO. 10N/03W-02R02

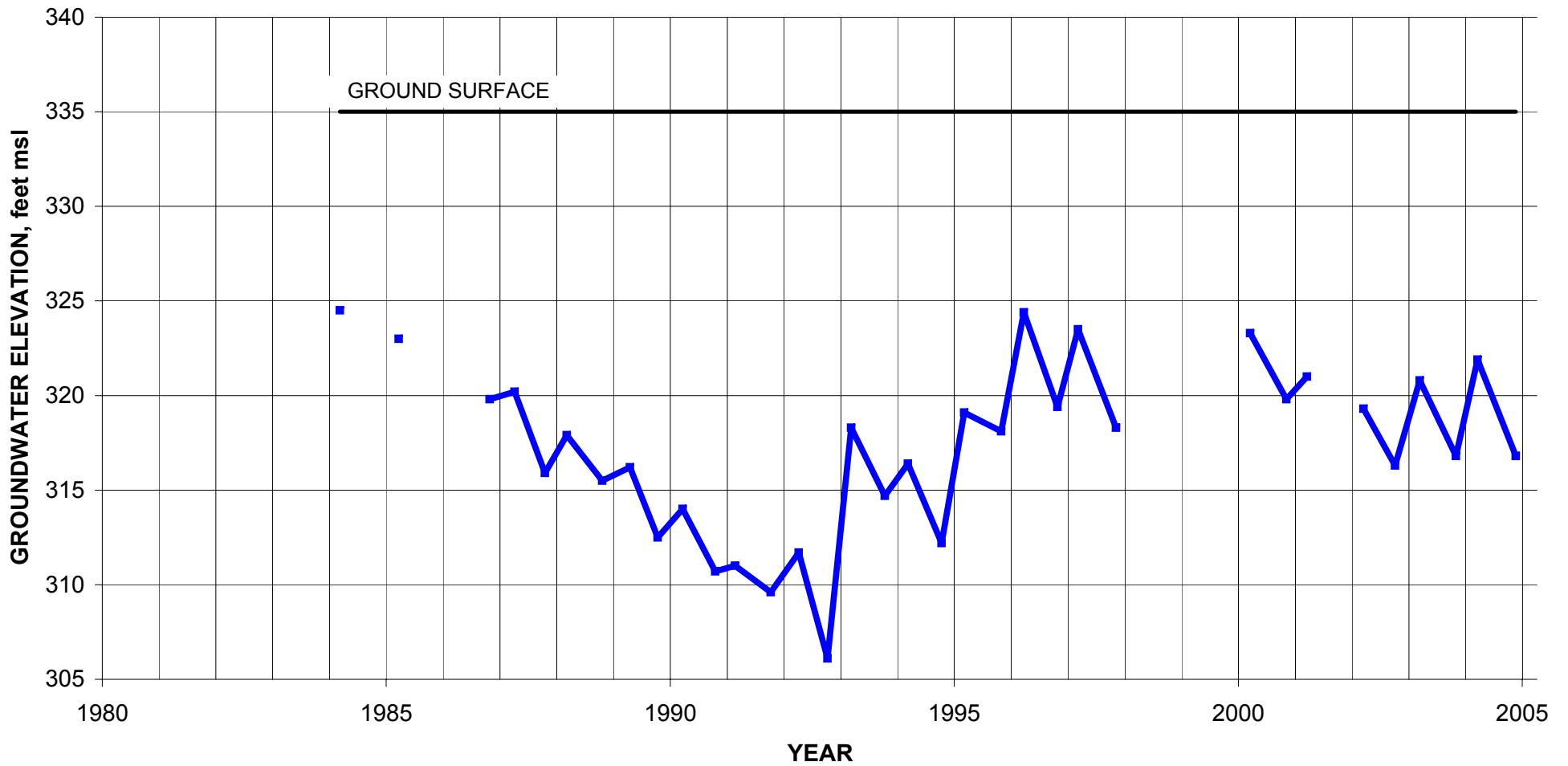


FIGURE 3

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 10N/02W-18F01

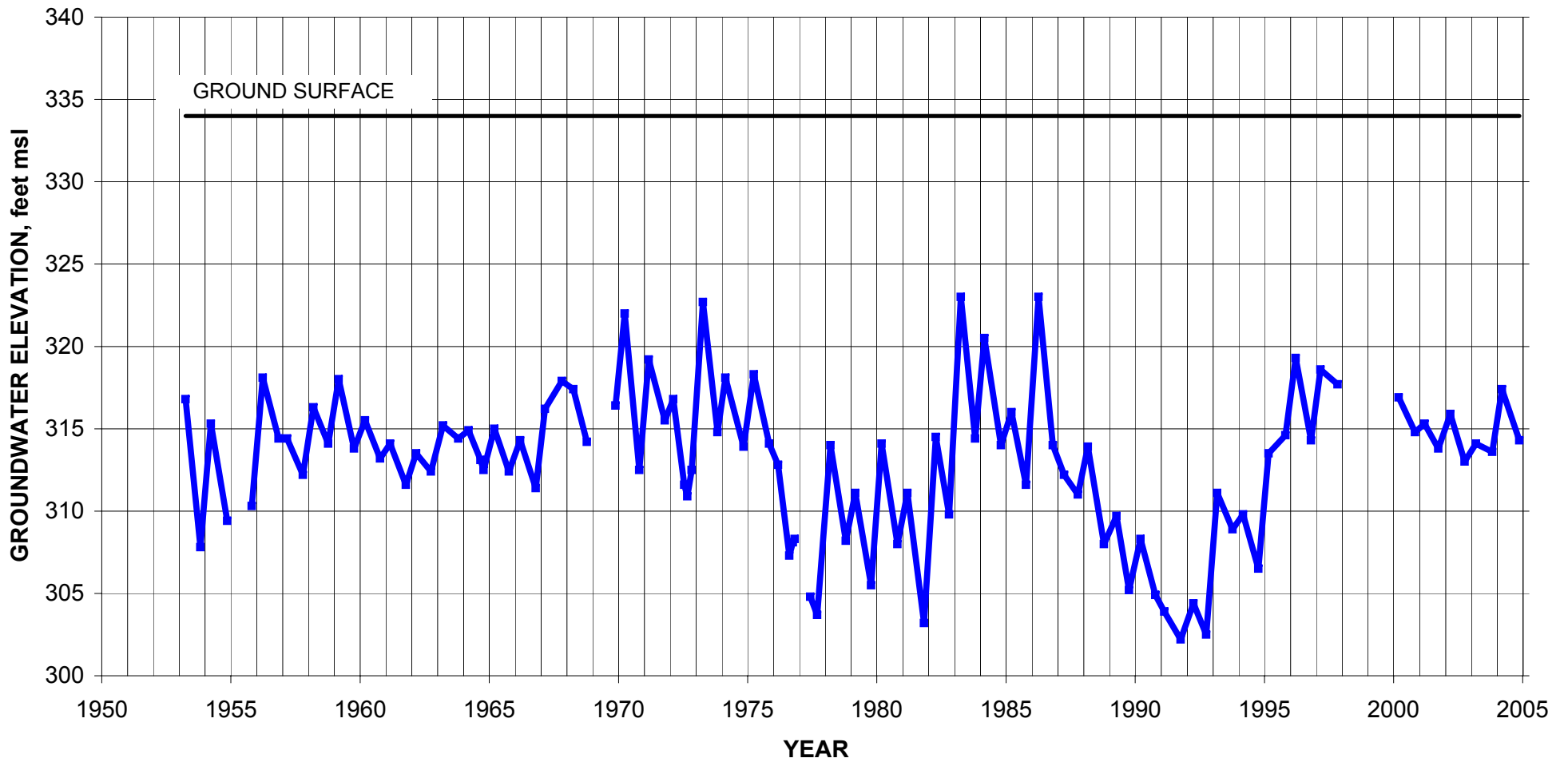


FIGURE 4

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 10N/01W-05E01

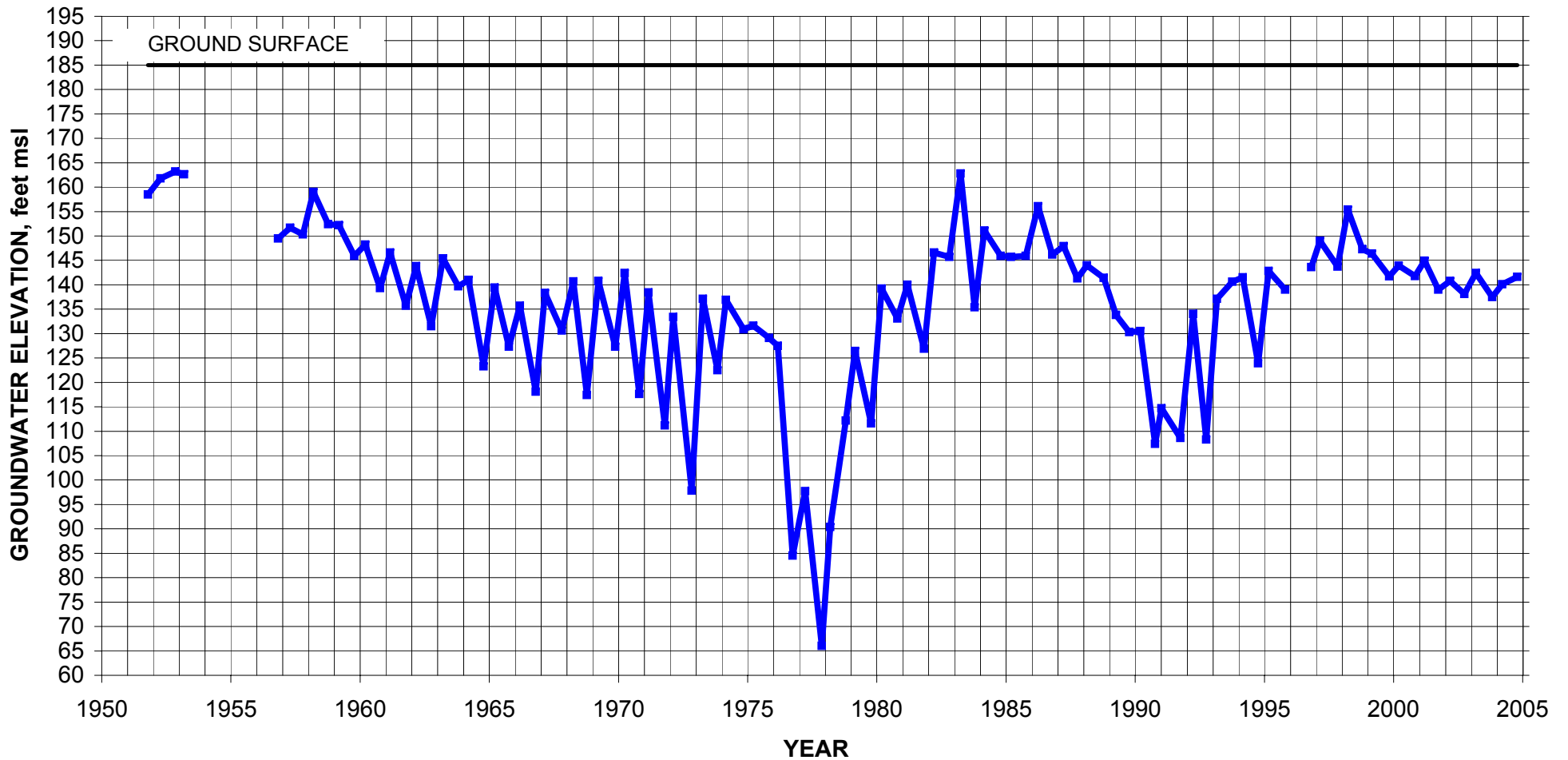


FIGURE 5

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 10N/01W-27F01

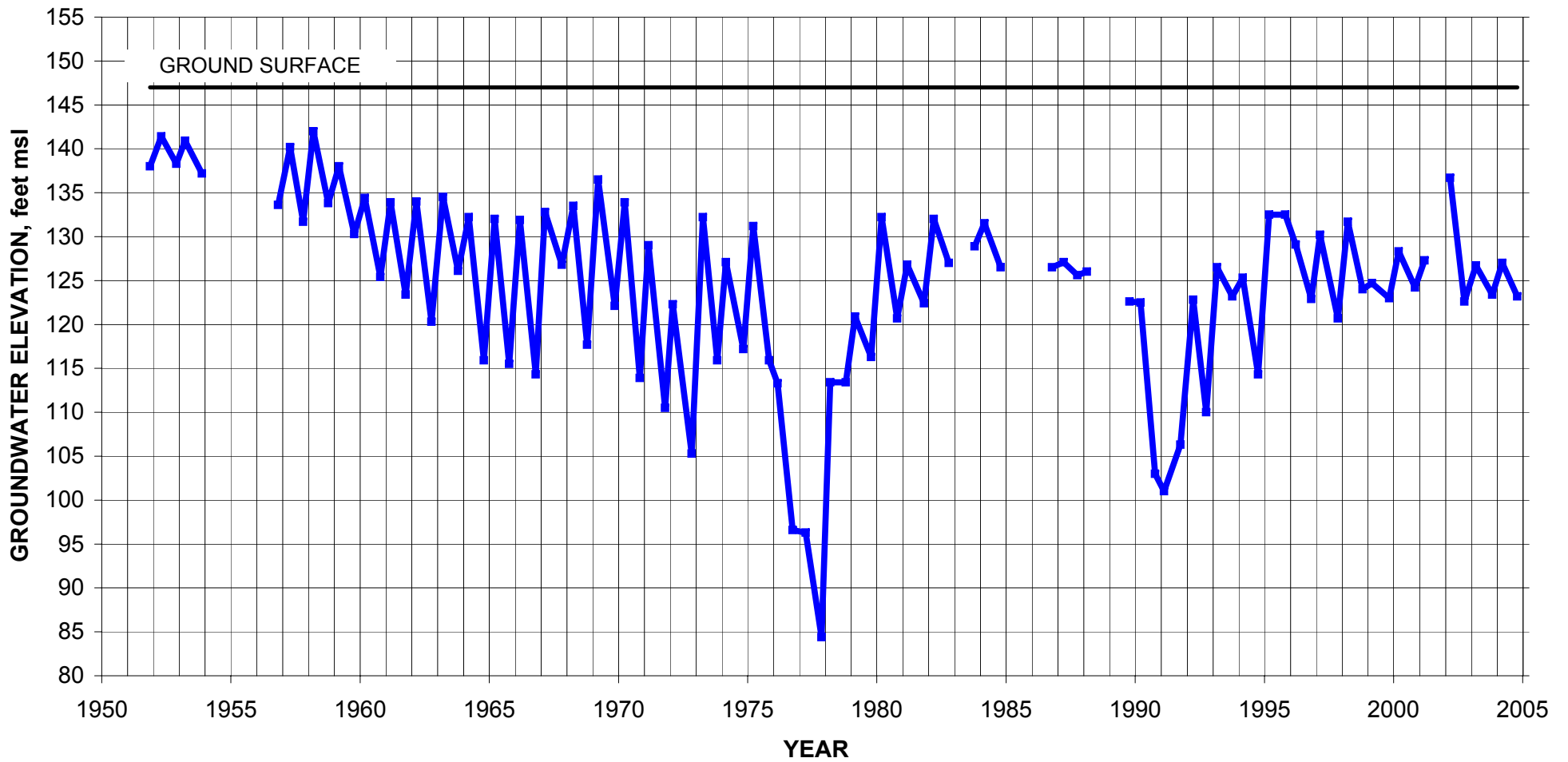


FIGURE 6

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 10N/02E-18M01

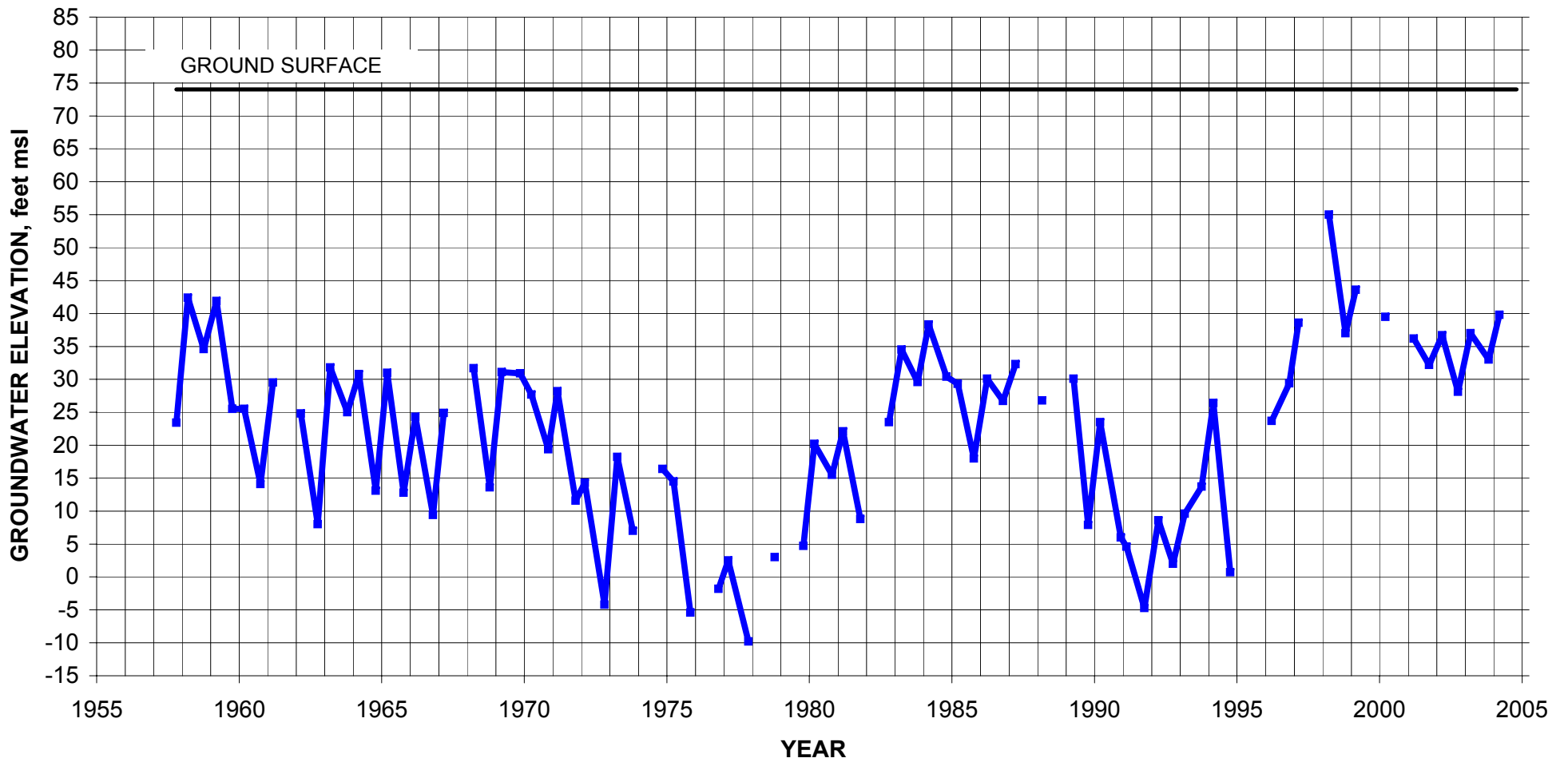


FIGURE 7

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 09N/01E-09D01

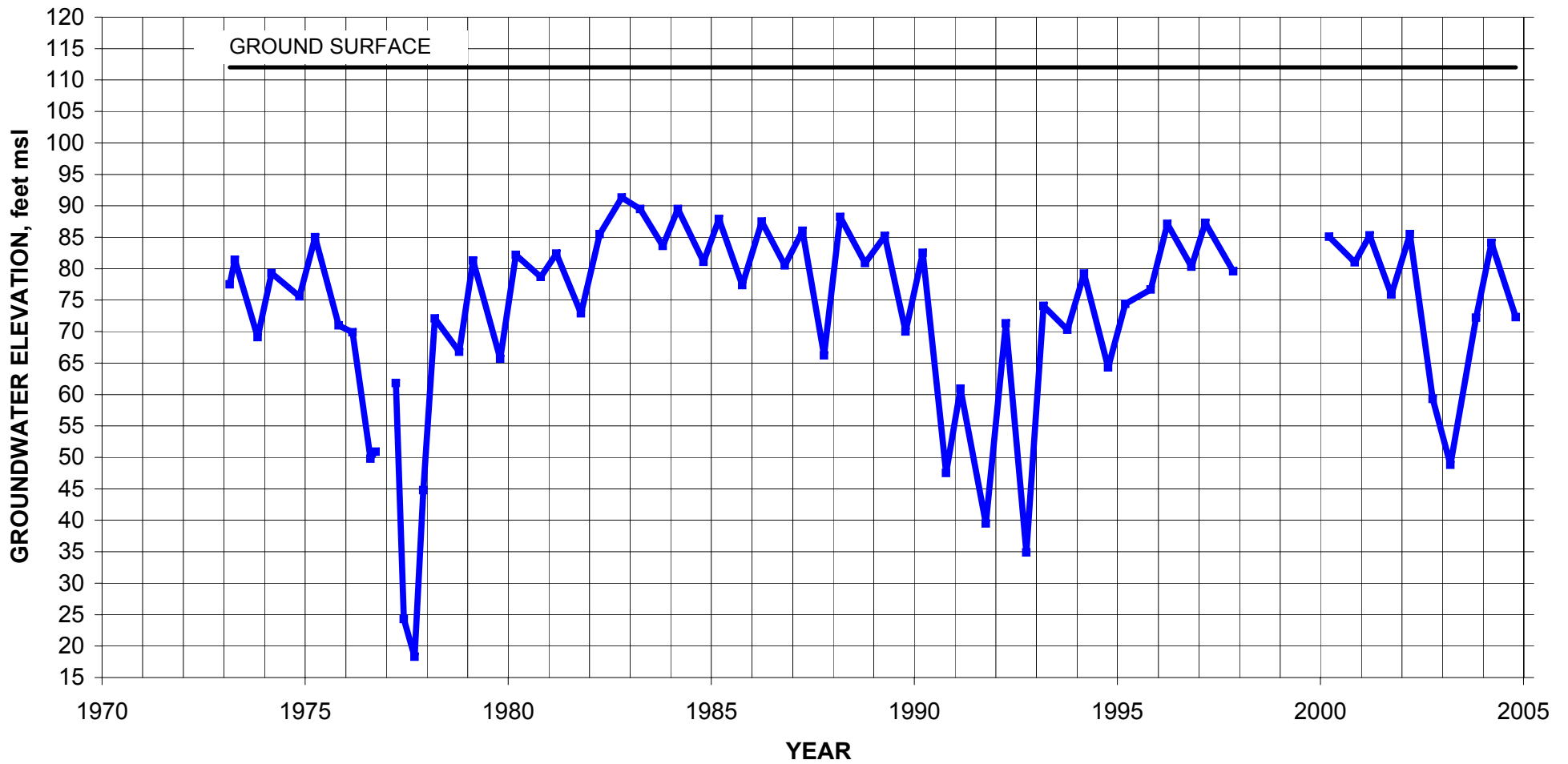


FIGURE 8

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 09N/01E-16A01

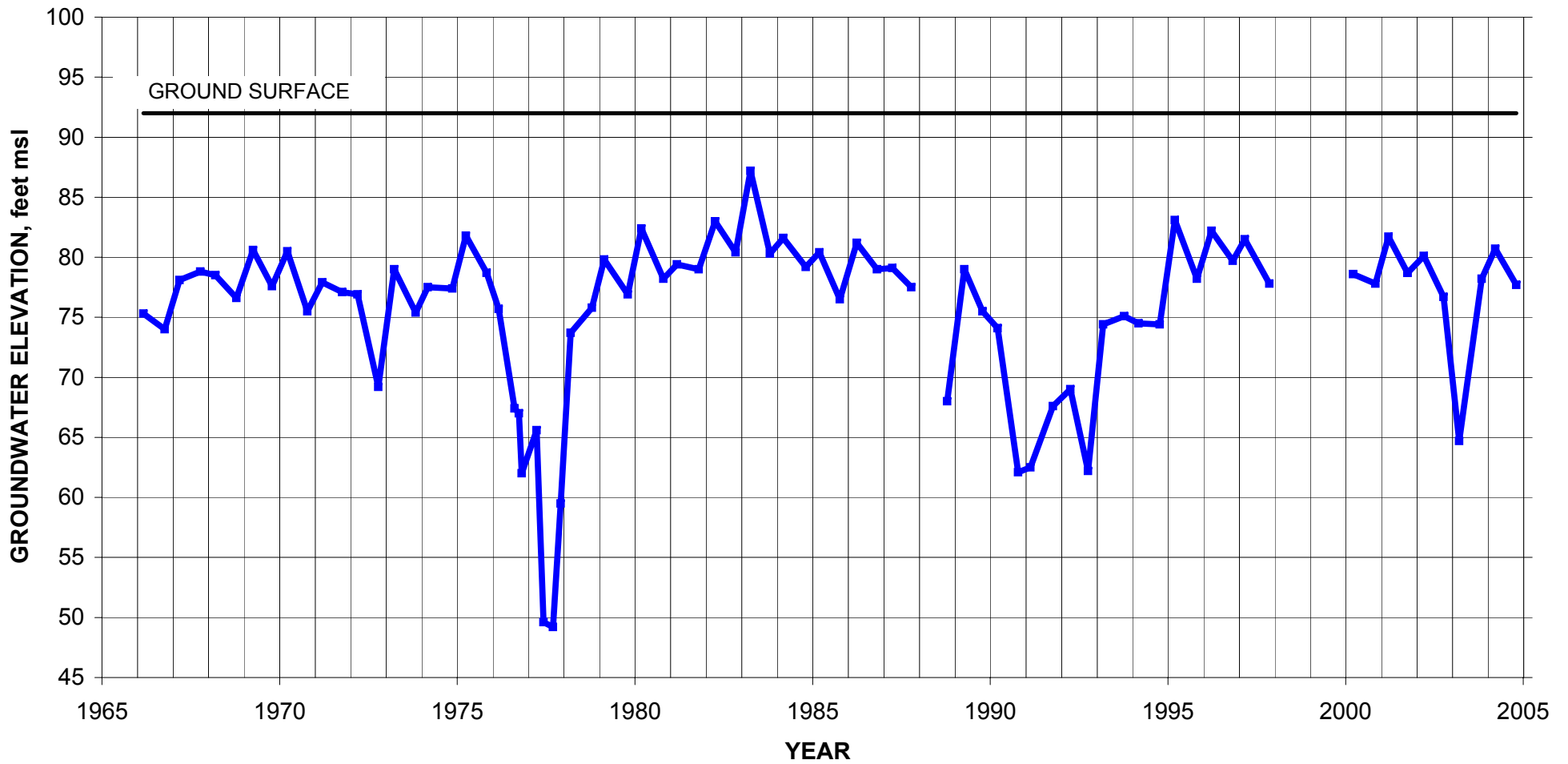


FIGURE 9

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 09N/02E-07L01

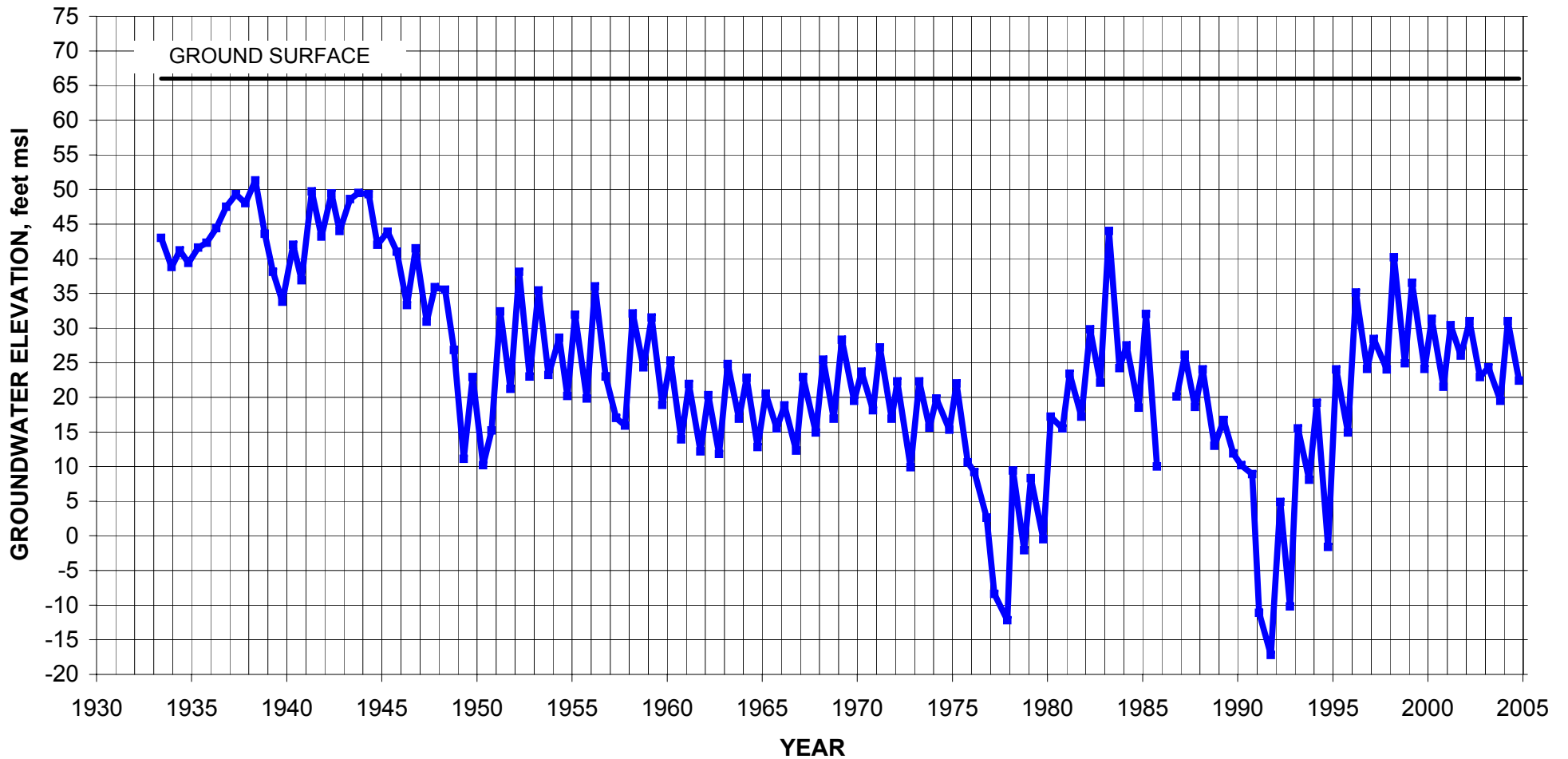


FIGURE 10

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 09N/02E-16N01

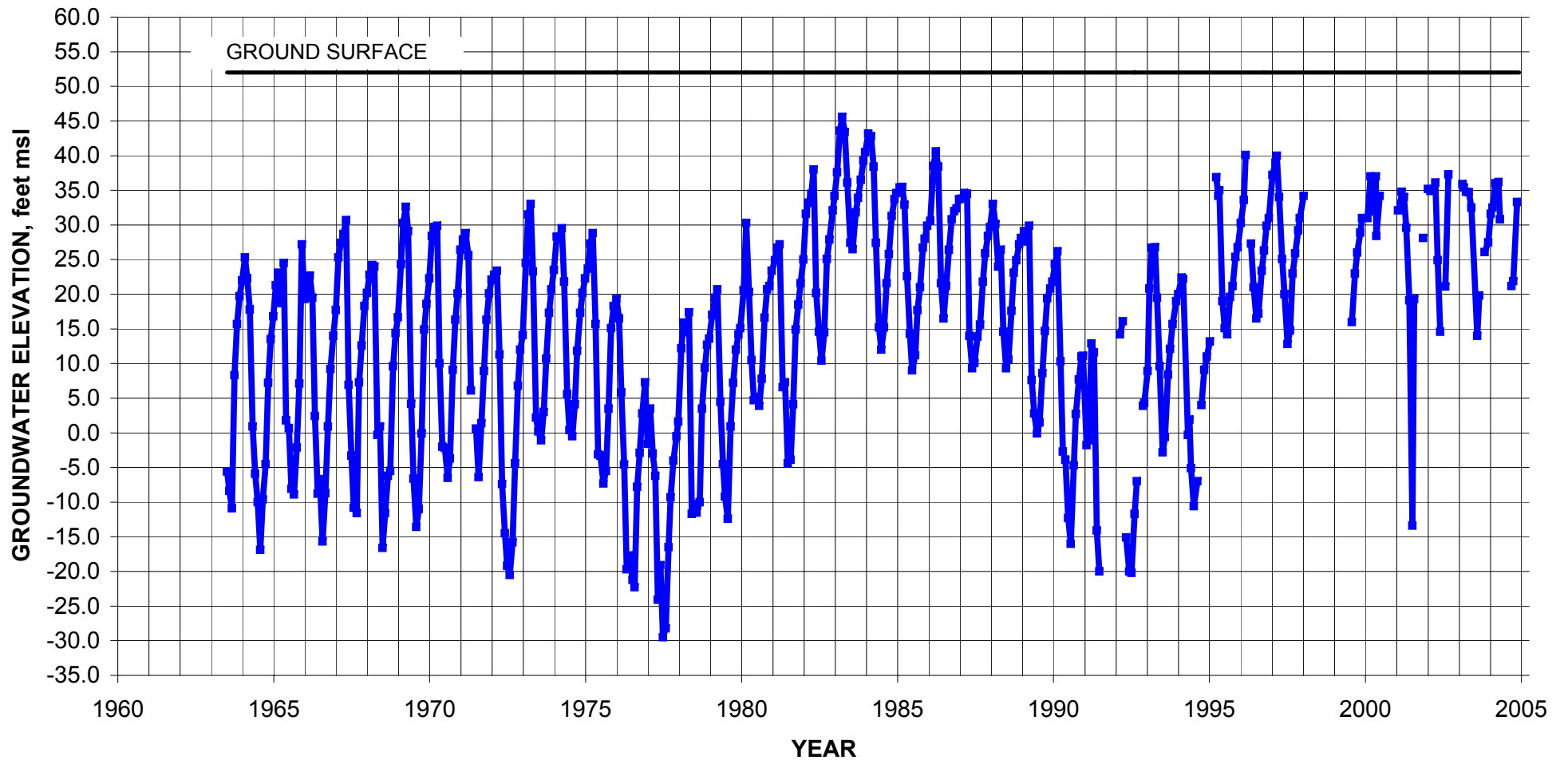


FIGURE 11

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 09N/01W-35M01

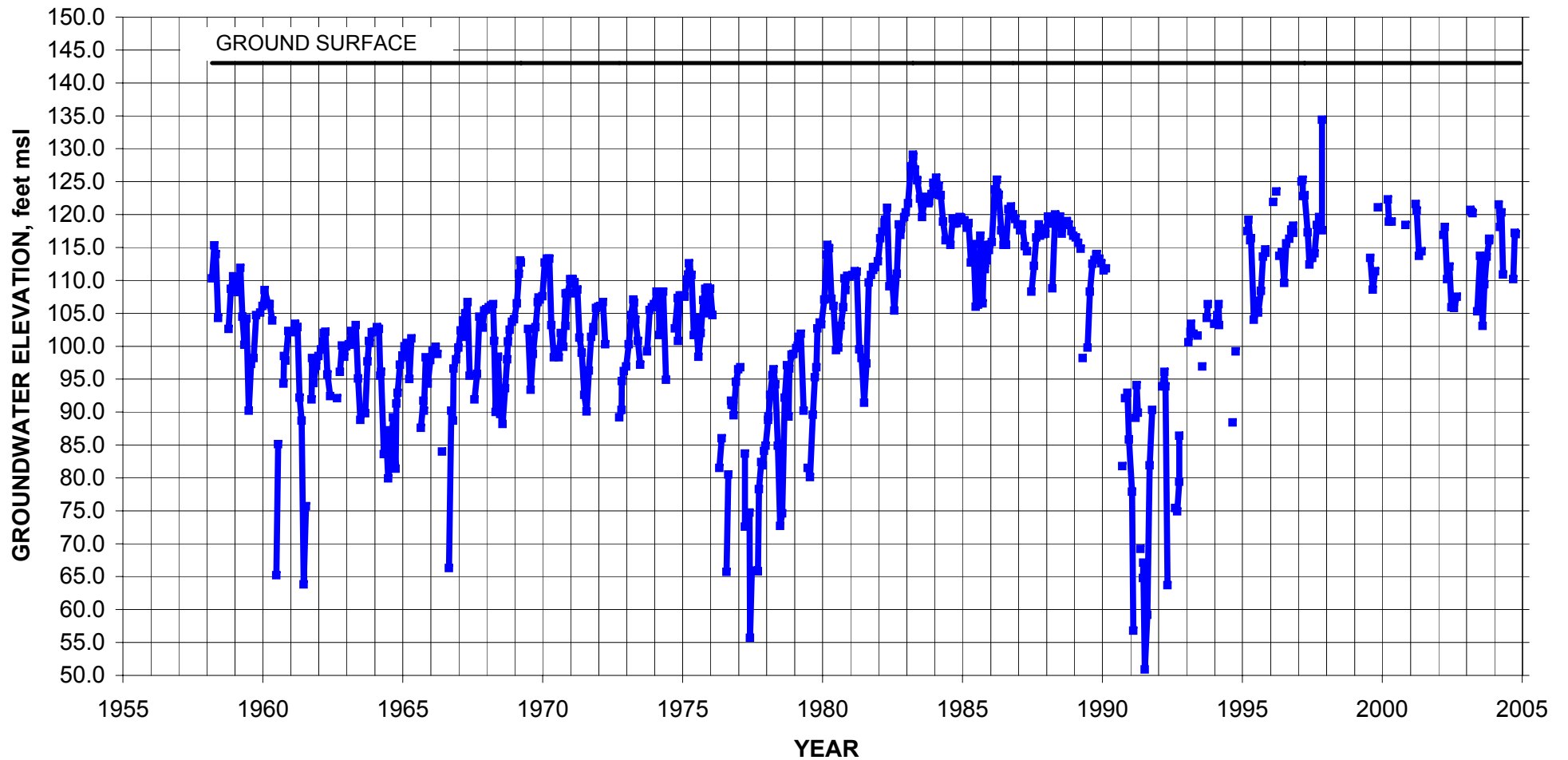


FIGURE 12

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 08N/01W-09C01

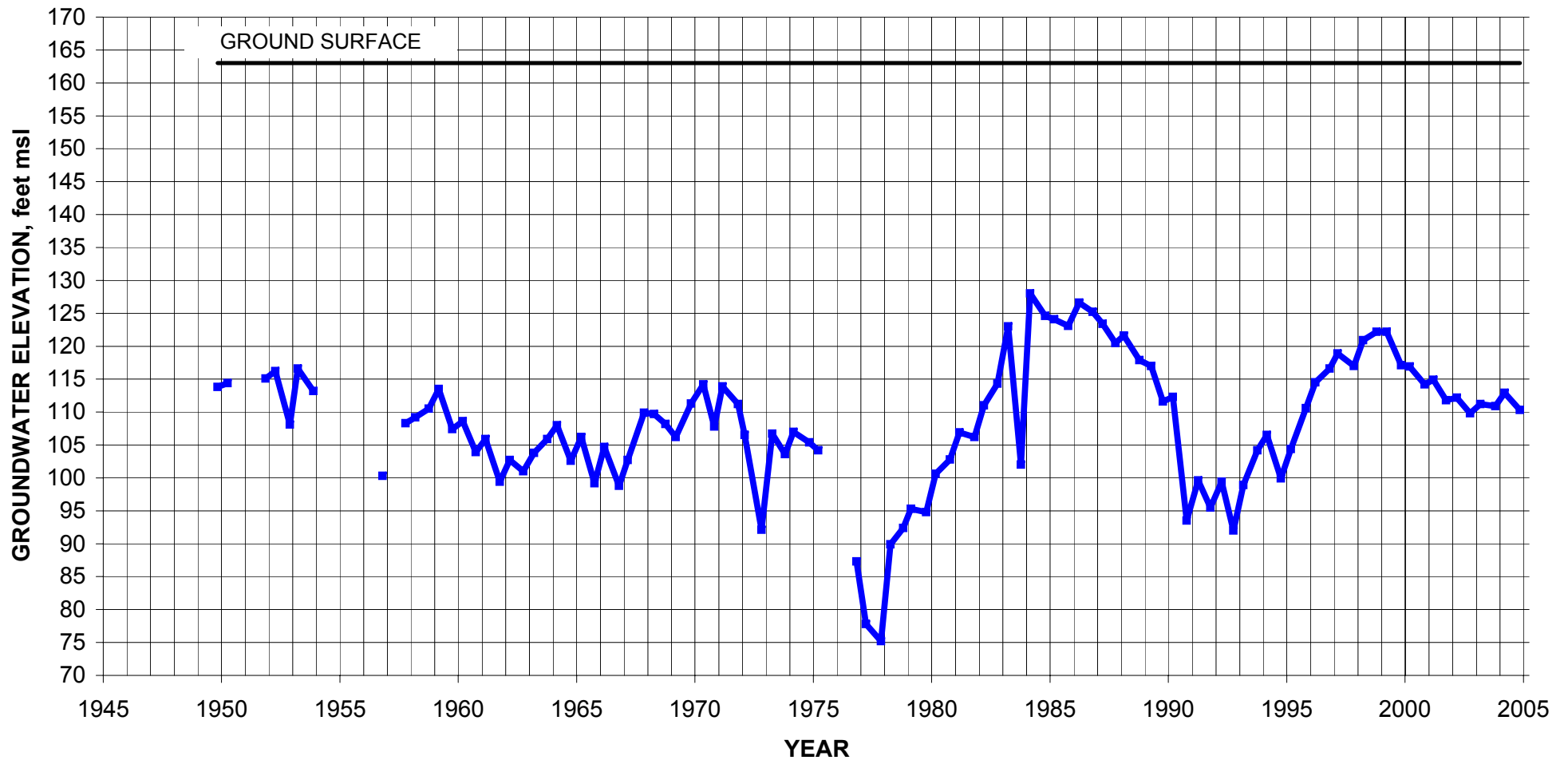
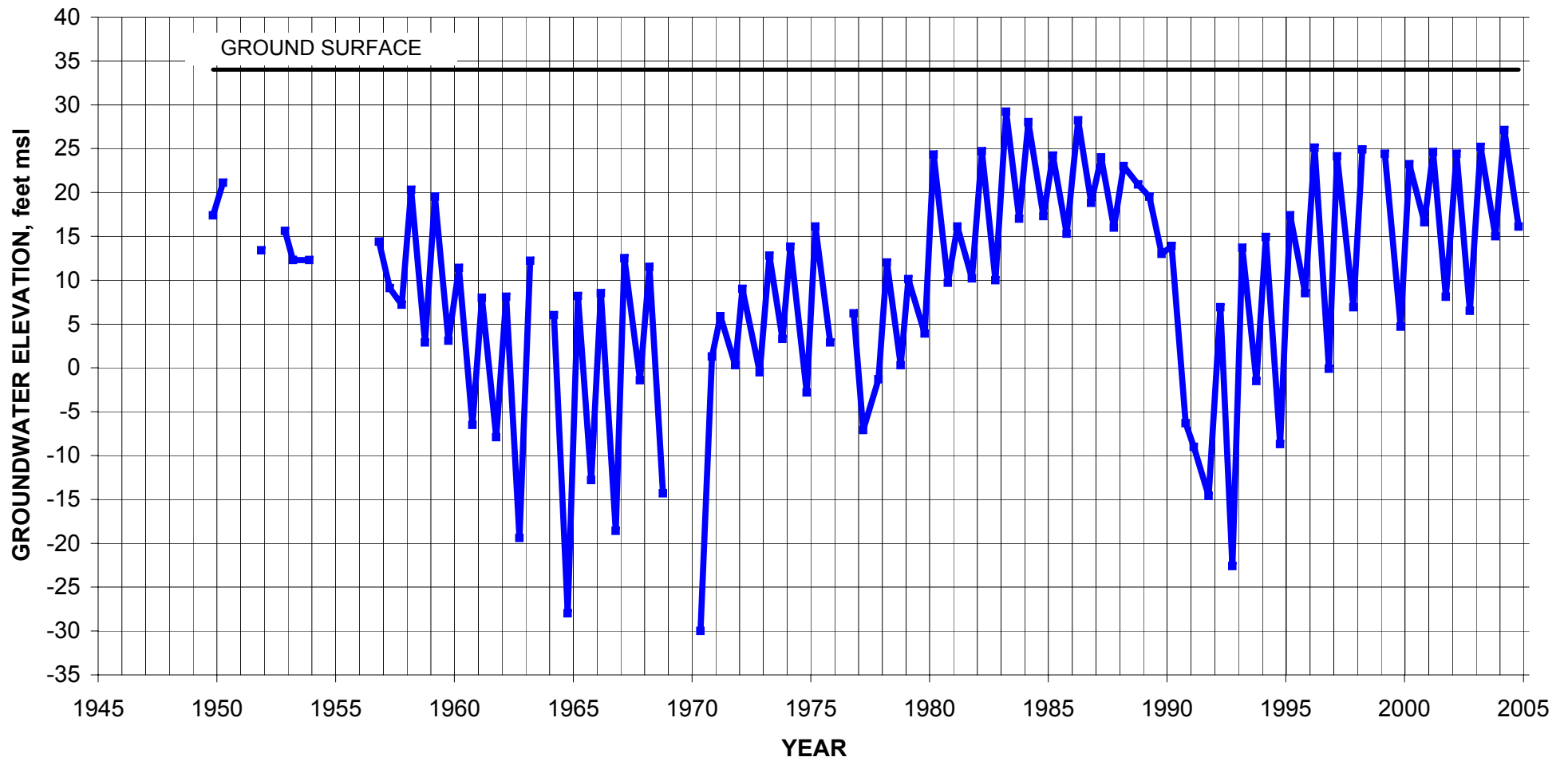


FIGURE 13

**YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT**

GROUNDWATER HYDROGRAPHS

WELL NO. 09N/02E-35E01

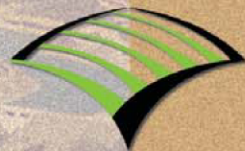


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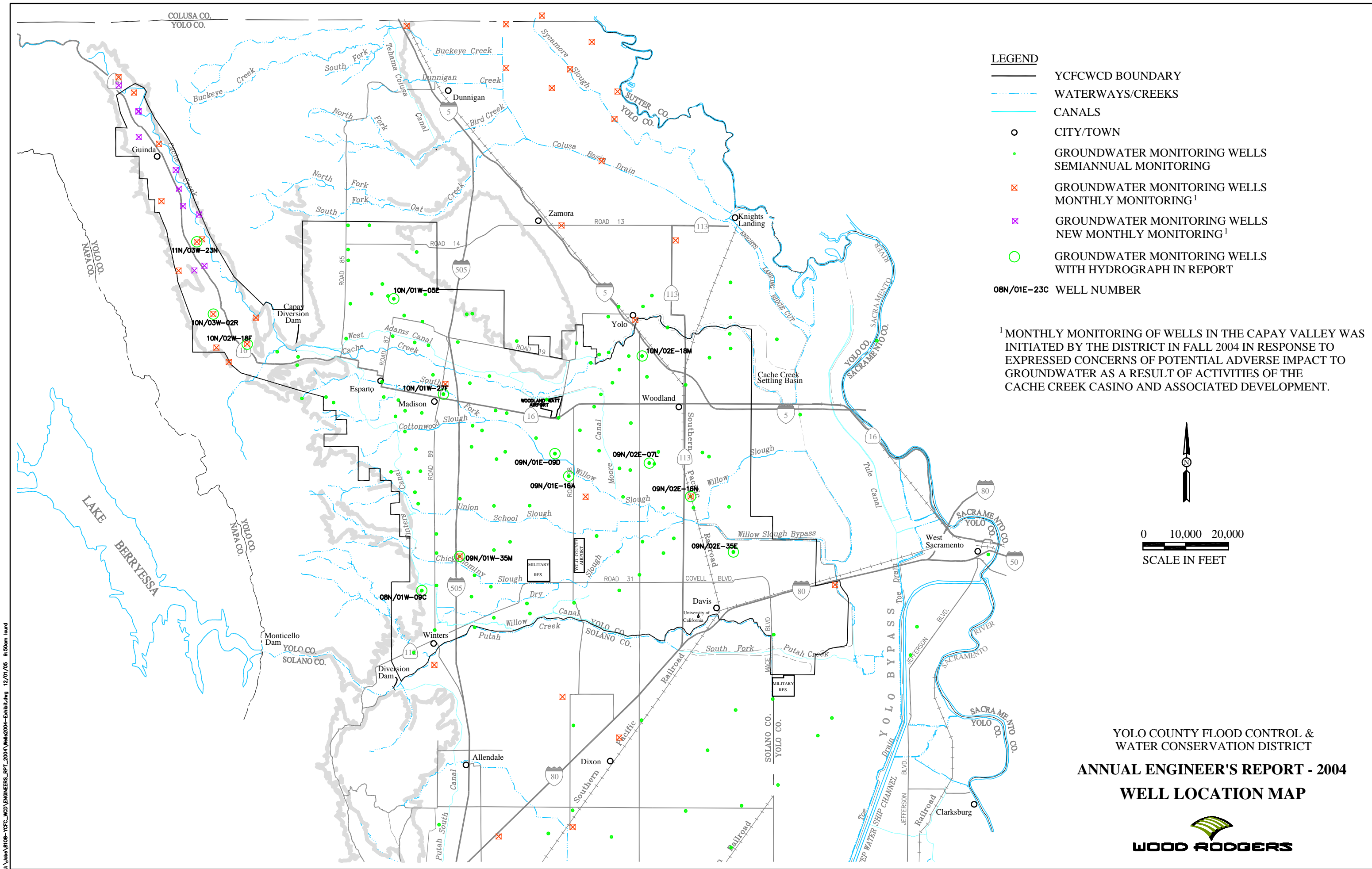
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Maps



Maps

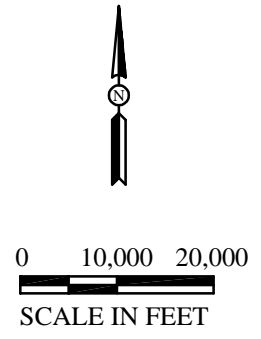


LEGEND

- YCFCWCD BOUNDARY
- WATERWAYS/CREEKS
- CANALS
- CITY/TOWN
- GROUNDWATER MONITORING WELLS SEMIANNUAL MONITORING
- GROUNDWATER MONITORING WELLS MONTHLY MONITORING¹
- GROUNDWATER MONITORING WELLS NEW MONTHLY MONITORING¹
- GROUNDWATER MONITORING WELLS WITH HYDROGRAPH IN REPORT

08N/01E-23C WELL NUMBER

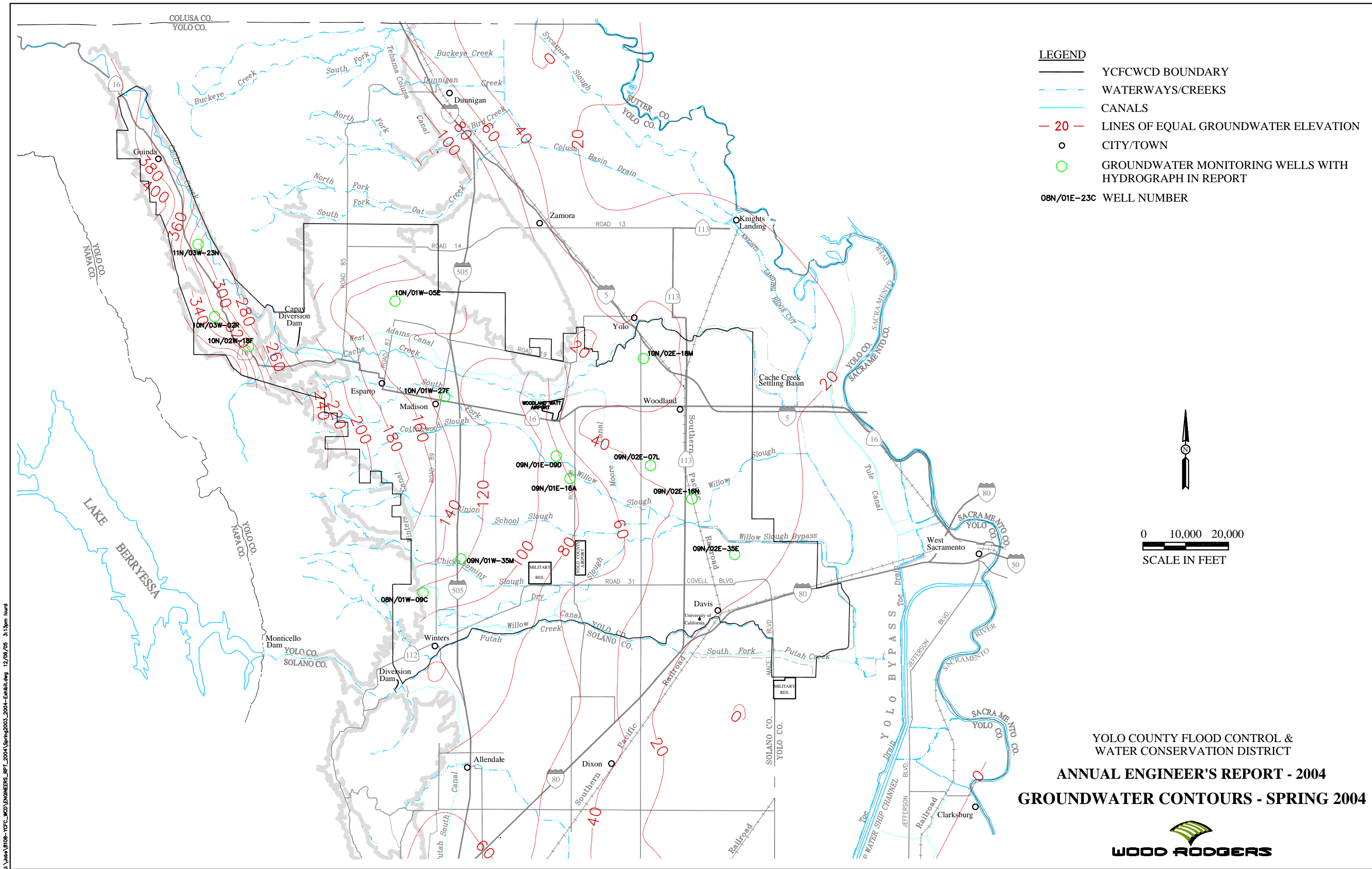
¹ MONTHLY MONITORING OF WELLS IN THE CAPAY VALLEY WAS INITIATED BY THE DISTRICT IN FALL 2004 IN RESPONSE TO EXPRESSED CONCERNS OF POTENTIAL ADVERSE IMPACT TO GROUNDWATER AS A RESULT OF ACTIVITIES OF THE CACHE CREEK CASINO AND ASSOCIATED DEVELOPMENT.



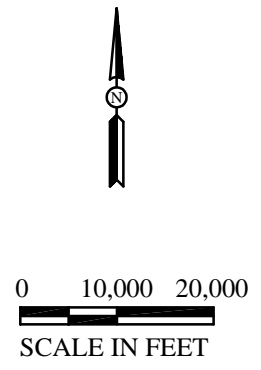
YOLO COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
ANNUAL ENGINEER'S REPORT - 2004
WELL LOCATION MAP



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- LEGEND**
- YCFCWCD BOUNDARY
 - WATERWAYS/CREEKS
 - CANALS
 - 20 — LINES OF EQUAL GROUNDWATER ELEVATION
 - CITY/TOWN
 - GROUNDWATER MONITORING WELLS WITH HYDROGRAPH IN REPORT
- 08N/01E-23C WELL NUMBER



YOLO COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
ANNUAL ENGINEER'S REPORT - 2004
GROUNDWATER CONTOURS - SPRING 2004



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