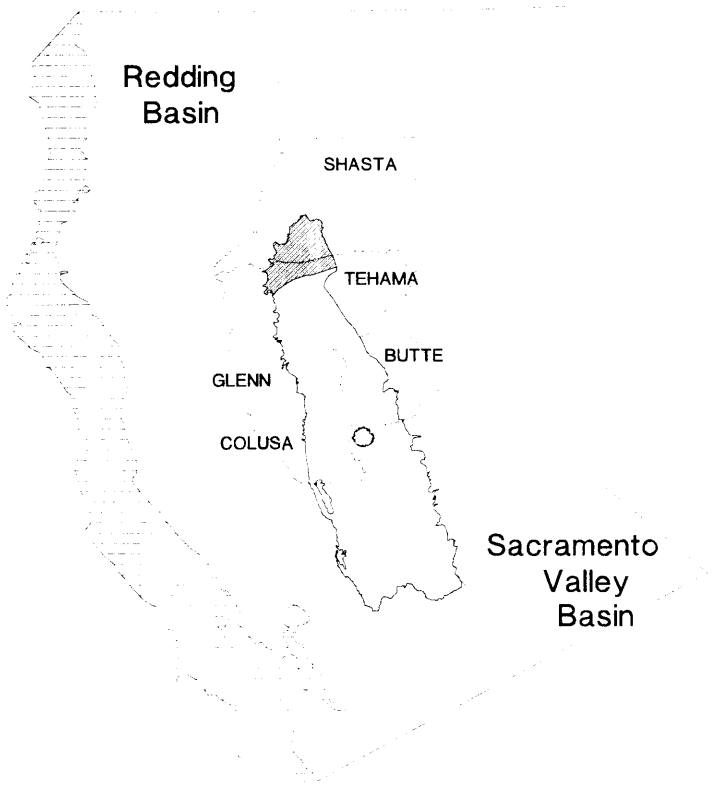
State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES
Northern District

GROUNDWATER LEVELS IN THE REDDING GROUNDWATER BASIN



November 1996

Pete Wilson
Governor
State of California

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

David N. Kennedy
Director
Department of Water Resources

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Data used to produce the tables, graphs, and maps are available through the Internet at the following address:

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For electronic copies of the data in this report and those listed above, contact the DWR district associated with the report:

Department of Water Resources
Northern District
Geology and Groundwater Section

2440 Main Street
Red Bluff, CA 96080-2398

~

Department of Water Resources
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Foreword

Groundwater is an important resource in the Cottonwood, Anderson, and Redding-Enterprise Areas of Northern California. Under the Northern California Water Management Program, the Northern District of the Department of Water Resources collects data on groundwater levels from 48 wells in the Redding groundwater basin.

This report summarizes groundwater level data collected by DWR since the mid 1950's through July 1996. The report presents well locations, information related to the monitoring program, and hydrographs depicting groundwater levels over time. This information will provide the basis for a better understanding of groundwater level trends in the Redding groundwater basin. Better understanding of the physical characteristics of the basin and the behavior of the groundwater should lead to productive and beneficial use, protection, and wise management by local agencies of this important resource.

William J. Bennett, Chief
Northern District

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Organization

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Introduction

The Redding groundwater basin is in the northern end of the Great Central Valley of California. About half of the basin lies in Shasta County and the other half lies in Tehama County. The basin is bounded by foothills of the Cascade Range and Klamath Mountains in the north, foothills of the Coast Ranges in the west and the foothills of the Sierra Nevada Range in the east. The southern end of the basin is bounded by the Red Bluff Arch, a subsurface uplift which separates the Redding groundwater basin from the Sacramento Valley groundwater basin.

Since the mid 1950's, DWR has measured groundwater levels in a total of 48 wells in the Redding groundwater basin. This report compiles information related to this monitoring program and includes groundwater hydrographs for the monitored wells.

Groundwater Level Data Management

The data presented in this report are electronically stored and maintained using a collection of data processing applications developed by DWR's Central and Northern Districts. This data management application, known as "EX-terra," consists of five main data tables that contain:

- Groundwater levels
- Generalized geographic data
- Well construction
- Well qualification data
- Coordinates.

EX-terra is configured to produce output files that are formatted for direct input to several widely available graphics programs. These may be used to create groundwater level contour maps or hydrographs, such as those presented in Appendix A.

The groundwater level and coordinate data presented in this report will soon be available in electronic form through the Internet (see inside front cover for details). The data files will be provided in ASCII delimited format. An ASCII documentation file explaining the contents of the data files will be included with each response to a data request.

State Well Numbering System

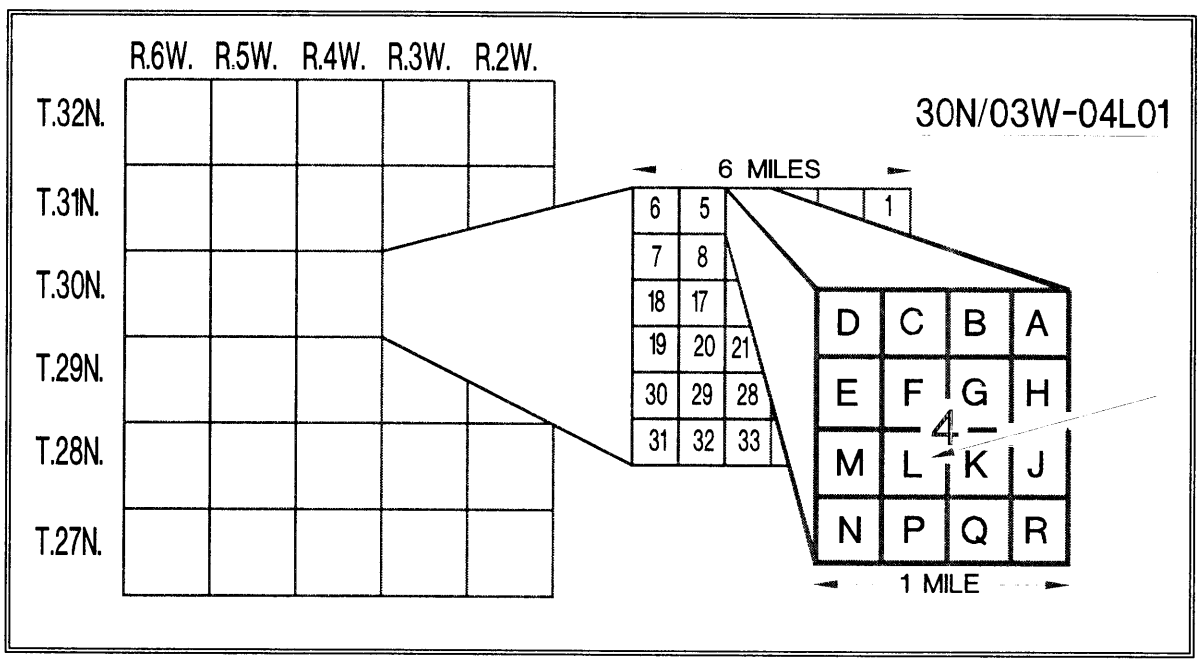
Each well in the monitoring program is assigned an official State Well Number. DWR has sole responsibility for assigning State Well Numbers to water wells in California, and each number uniquely identifies a well based on its location.

Each State Well Number includes township, range and section number, and each section is further subdivided into sixteen 40-acre tracts, which are assigned a letter designation as shown below. Within each 40-acre tract, wells are numbered sequentially in the order they are inventoried. The final letter of the identification signifies the base line and meridian to which the well location refers.

In the Redding groundwater basin, all wells are referenced to the Mount Diablo base line and meridian. The example below is for State Well Number 30N/03W-04L01M.

Figure 1

State Well Numbering System



The lettering system does not contain the letters "I" and "O"

Measurement Frequency and Period of Record

Table I shows the period of record and frequency of measurement for the Redding groundwater basin wells monitored historically by the Geology and Groundwater Section of the Northern District. The wells currently measured are labeled as ACTIVE.

Most wells are measured semiannually: once in spring, usually during March, and once in fall, during October. Dates of the measurements are timed to obtain the approximate highest static water level in the spring and approximate lowest static water level in the fall. Starting October 1994, seven wells are measured quarterly (March, July, October, and December). Some of these wells were previously measured monthly. Over time, the measurement frequency for many wells in the monitoring program has alternated between semiannually and monthly and later the monthly to quarterly. The quarterly grid is an expanded monthly grid to include more wells. The "Measurement Frequency" column in Table 1 reflects only the most recent measurement frequency for the wells.

Table 1
Measurement Frequency and Period of Record

State Well Number	Agency	Measurement Frequency	Number of Measurments	Record Begins	Record Ends
28N/04W-04P01M	DWR	Semi-annually	5	10/12/94	Active
28N/05W-13D01M	DWR	Semi-annually	5	10/12/94	Active
29N/03W-06P01M	DWR	Semi-annually	192	10/19/55	Active
29N/04W-02P01M	DWR	Quarterly	276	05/20/68	Active
29N/04W-04R03M	DWR	Quarterly	139	03/16/54	Active
29N/04W-05Q01M	DWR	Semi-annually	11	10/19/78	10/11/83
29N/04W-15E02M	DWR	Semi-annually	60	06/18/47	Active
29N/04W-27A01M	DWR	Semi-annually	5	10/12/94	Active
29N/04W-28D01M	DWR	Semi-annually	38	10/19/78	Active
29N/04W-30L01M	DWR	Semi-annually	57	03/30/56	Active
29N/04W-35B01M	DWR	Quarterly	75	05/04/65	Active
29N/05W-07B01M	DWR	Semi-annually	131	10/11/55	Active
29N/05W-09L01M	DWR	Semi-annually	37	10/19/78	Active
29N/05W-11A02M	DWR	Quarterly	255	10/28/57	Active
29N/05W-14L01M	DWR	Semi-annually	37	10/19/78	Active
29N/05W-16R01M	DWR	Semi-annually	58	03/30/56	Active
29N/05W-26N01M	DWR	Semi-annually	42	11/02/55	Active
30N/03W-04L01M	DWR	Semi-annually	11	10/10/91	Active
30N/03W-04M01M	DWR	Semi-annually	56	11/03/55	Active
30N/03W-06J01M	DWR	Semi-annually	22	11/15/55	03/13/79
30N/03W-06K01M	DWR	Semi-annually	31	10/15/81	Active
30N/03W-18F02M	DWR	Semi-annually	37	12/05/78	Active
30N/03W-29K01M	DWR	Semi-annually	52	10/20/55	10/20/94
30N/03W-30N01M	DWR	Semi-annually	54	10/23/55	10/11/83
30N/04W-03Q01M	DWR	Semi-annually	191	11/07/55	Active
30N/04W-05K01M	DWR	Semi-annually	58	10/13/55	Active
30N/04W-06B03M	DWR	Quarterly	211	04/10/56	03/01/79
30N/04W-15R03M	DWR	Quarterly	232	10/17/55	10/18/94
30N/04W-23G01M	DWR	Semi-annually	84	10/13/55	Active
30N/05W-02Q01M	DWR	Semi-annually	37	10/19/78	Active
30N/05W-05Q01M	DWR	Semi-annually	39	10/19/78	Active
30N/05W-23D01M	DWR	Semi-annually	12	03/02/61	03/31/80
31N/03W-06H01M	DWR	Semi-annually	124	04/08/57	Active
31N/03W-10J01M	DWR	Semi-annually	59	11/29/55	Active
31N/03W-18B01M	DWR	Semi-annually	40	11/15/55	10/09/87
31N/03W-24C01M	DWR	Semi-annually	57	11/29/55	Active
31N/03W-24C02M	DWR	Semi-annually	9	10/15/92	Active
31N/03W-28L01M	DWR	Semi-annually	40	11/02/76	Active
31N/03W-29N01M	DWR	Semi-annually	255	11/15/55	Active
31N/04W-09D01M	DWR	Semi-annually	58	11/09/55	Active
31N/04W-12B01M	DWR	Semi-annually	26	12/02/55	03/29/80
31N/04W-15K01M	DWR	Semi-annually	118	10/17/56	Active
31N/04W-16H01M	DWR	Quarterly	308	11/15/68	Active
31N/04W-16M01M	DWR	Semi-annually	44	04/20/78	Active
31N/04W-25Q01M	DWR	Semi-annually	50	03/19/58	Active
31N/04W-27P01M	DWR	Semi-annually	134	04/05/56	Active
31N/04W-29R02M	DWR	Semi-annually	56	04/03/56	Active
32N/04W-33G01M	DWR	Semi-annually	37	10/18/78	Active

Well Locations

Locations of the Redding groundwater basin monitoring wells are shown in Appendix B. Figure 2 tabulates the coordinates of these wells. The latitude, longitude, and Zone 10 UTM *(Universal Transverse Mercator)* coordinates, in meters, for each well are estimated to be within 500 feet.

We determined the coordinates by plotting the location of each well on USGS 7.5-minute quadrangles, using information on file with DWR. The UTM coordinates of the plotted locations were digitized from these quadrangles. Latitude and longitude coordinates for each well were calculated from the digitized UTM coordinate data using software developed by the U.S. Geological Survey.

Should you detect an error in location, please notify the Department of Water Resources, Northern District, Geology and Groundwater Section, 2440 Main Street, Red Bluff, California 96080-2398, telephone number (916) 529-7314.

Table 1
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30N/03W-29K01M	DWR	Semi-annually	52	10/20/55	10/20/94
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31N/03W-28L01M	DWR	Semi-annually	40	11/02/76	Active
31N/03W-29N01M	DWR	Semi-annually	255	11/15/55	Active
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Table 2
Locations for Groundwater Level Monitoring Wells

State Well Number	UTM Coordinates East	UTM Coordinates North	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Latitude (Degrees Minutes Seconds)			Longitude (Degrees Minutes Seconds)		
28N/04W-04P01M	557706	4461483	40.3037	122.3210	40	18	13	122	19	16
28N/05W-13D01M	552571	4459512	40.2863	122.3816	40	17	11	122	22	54
29N/03W-06P01M	563989	4471169	40.3905	122.2461	40	23	26	122	14	46
29N/04W-02P01M	560625	4471273	40.3917	122.2857	40	23	30	122	17	8
29N/04W-04R03M	558454	4471343	40.3925	122.3113	40	23	33	122	18	41
29N/04W-05Q01M	556528	4471153	40.3909	122.3340	40	23	27	122	20	2
29N/04W-15E02M	558612	4468680	40.3685	122.3096	40	22	7	122	18	35
29N/04W-27A01M	560088	4466114	40.3453	122.2925	40	20	43	122	17	33
29N/04W-28D01M	556991	4465837	40.3430	122.3290	40	20	35	122	19	44
29N/04W-30L01M	554164	4465245	40.3379	122.3623	40	20	16	122	21	44
29N/04W-35B01M	561267	4464602	40.3316	122.2788	40	19	54	122	16	44
29N/05W-07B01M	545027	4470810	40.3885	122.4695	40	23	19	122	28	10
29N/05W-09L01M	547879	4469795	40.3792	122.4360	40	22	45	122	26	10
29N/05W-11A02M	551931	4470923	40.3892	122.3882	40	23	21	122	23	17
29N/05W-14L01M	551292	4468508	40.3674	122.3959	40	22	3	122	23	45
29N/05W-16R01M	548825	4468023	40.3632	122.4250	40	21	48	122	25	30
29N/05W-26N01M	550610	4464604	40.3323	122.4042	40	19	56	122	24	15
30N/03W-04L01M	567218	4481623	40.4845	122.2069	40	29	4	122	12	25
30N/03W-04M01M	566793	4481550	40.4838	122.2119	40	29	2	122	12	43
30N/03W-06J01M	564652	4481563	40.4841	122.2372	40	29	3	122	14	14
30N/03W-06K01M	564357	4481428	40.4829	122.2407	40	28	59	122	14	27
30N/03W-18F02M	563759	4478421	40.4559	122.2481	40	27	21	122	14	53
30N/03W-29K01M	565945	4475106	40.4258	122.2226	40	25	33	122	13	21
30N/03W-30N01M	563667	4474365	40.4193	122.2495	40	25	10	122	14	58
30N/04W-03Q01M	559370	4481301	40.4821	122.2995	40	28	56	122	17	58
30N/04W-05K01M	555735	4481284	40.4822	122.3424	40	28	56	122	20	33
30N/04W-06B03M	554889	4482139	40.4900	122.3523	40	29	24	122	21	8
30N/04W-15R03M	559760	4477679	40.4495	122.2953	40	26	58	122	17	43
30N/04W-23G01M	561050	4476877	40.4422	122.2801	40	26	32	122	16	49
30N/05W-02Q01M	551290	4480838	40.4785	122.3949	40	28	43	122	23	42
30N/05W-05Q01M	546430	4480468	40.4755	122.4523	40	28	32	122	27	8
30N/05W-23D01M	550416	4476966	40.4437	122.4055	40	26	37	122	24	20
31N/03W-06H01M	564555	4491659	40.5751	122.2373	40	34	30	122	14	14
31N/03W-10J01M	569211	4489650	40.5566	122.1825	40	33	24	122	10	57
31N/03W-18B01M	564123	4488613	40.5477	122.2427	40	32	52	122	14	34
31N/03W-24C01M	571664	4487296	40.5352	122.1538	40	32	7	122	9	14
31N/03W-24C02M	571667	4487235	40.5346	122.1538	40	32	5	122	9	14
31N/03W-28L01M	566908	4484688	40.5121	122.2103	40	30	44	122	12	34
31N/03W-29N01M	564697	4484206	40.5079	122.2364	40	30	29	122	14	11
31N/04W-09D01M	557130	4490366	40.5640	122.3252	40	33	50	122	19	31
31N/04W-12B01M	562437	4490414	40.5640	122.2625	40	33	50	122	15	45
31N/04W-15K01M	559238	4487808	40.5408	122.3005	40	32	27	122	18	2
31N/04W-16H01M	558164	4488350	40.5457	122.3131	40	32	45	122	18	47
31N/04W-16M01M	556947	4487758	40.5405	122.3275	40	32	26	122	19	39
31N/04W-25Q01M	562367	4484298	40.5089	122.2639	40	30	32	122	15	50
31N/04W-27P01M	559076	4484285	40.5091	122.3027	40	30	33	122	18	10
31N/04W-29R02M	556579	4483980	40.5065	122.3322	40	30	23	122	19	56

Well Qualification

Well qualification is a standardized process to identify the aquifer(s) associated with individual monitoring wells. Table 3 shows the qualification of each well. Figure 2 is a stratigraphic column which shows the relationship between the geologic formations and their general physical and water bearing characteristics.

A groundwater basin is often stratified with several layers of pervious, impervious and semi-impervious material. These layers form an upper unconfined and one or more lower confined to semi-confined zones (described as groundwater bodies or aquifers). Water wells may draw from two or more different aquifers.

In order to compare and understand the water level data from various monitoring wells, one must identify which aquifer(s) each well is drawing from by qualifying the wells.

There are four components in well qualification. They are:

I. The groundwater body classification of the well's groundwater aquifer(s).

1. Unconfined groundwater body.
2. Semi-confined groundwater body.
3. Confined groundwater body.
4. Previously named zone either confined or unconfined, i.e., "A" zone confined, or "Silverado."
5. Composite, consisting of both free and confined groundwater bodies.

II. The degree of certainty associated with the groundwater body classification.

1. Definite: Evidence is conclusive.
2. Probable: Evidence is not conclusive, but includes fairly convincing evidence in support.
3. Possible: Evidence is not conclusive and not as firm as probable, but evidence indicates that it could be or that it is possible.

III. The hydrogeologic unit as the water bearing material associated with the groundwater body. (i.e. Qal - Alluvium, Ttu - Tuscan Formation etc.)

IV. The date of qualification and the licensed professional who qualified the well.

Information used to qualify a well may be found from the following sources.

- Well Completion Reports (Drillers' Well Logs) may contain the log of geologic formation by depth of the bore hole, well construction information, and well test information such as drawdown and yield. When no well completion report is available, a report of a nearby well is substituted and the degree of certainty is reduced to probable or possible in qualifying the well.
- Geologic maps.
- Water level records are analyzed for patterns of water level fluctuation.
- Electric logs - chart the resistivity vs. depth of a well. They are used to locate the vertical boundaries of water-bearing materials.
- Pump test records.
- Water quality and temperature records.

The amount of information available for a well affects the degree of certainty of the groundwater body classification.

Table 3
Well Qualification for Monitoring Wells in the Redding Basin

State Well Number	Well Completion Report Number	Well Use	Groundwater Body	Hydrogeologic Units	Confidence
28N/04W-04P01M	98921	Domestic	Confined	Tte	Probable
28N/05W-13D01M	12955	Domestic	Confined	Tte	Probable
29N/03W-06P01M	None on file	Domestic	Unconfined	Tte	Possible
29N/04W-02P01M	On file, no number	Abandoned	Semi-confined	Tte	Probable
29N/04W-04R03M	116443	Domestic	Unconfined	Tte	Probable
29N/04W-05Q01M	65867	Domestic	Semi-confined	Tte	Probable
29N/04W-15E02M	None on file	Irrigation	Composite	Tte	Probable
29N/04W-27A01M	431235	Domestic	Confined	Tte	Probable
29N/04W-28D01M	65126	Domestic	Semi-confined	Tte	Definite
29N/04W-30L01M	On file, no number	Irrigation	Composite	Tte	Probable
29N/04W-35B01M	On file, no number	Test	Semi-confined	Tte+Ttu	Definite
29N/05W-07B01M	On file, no number	Irrigation	Composite	Tte	Definite
29N/05W-09L01M	10005	Domestic	Semi-confined	Tte	Definite
29N/05W-11A02M	18447	Irrigation	Composite	Tte	Probable
29N/05W-14L01M	113568	Domestic	Semi-confined	Tte	Probable
29N/05W-16R01M	None on file	Irrigation	Composite	Tte	Probable
29N/05W-26N01M	None on file	Irrigation	Composite	Tte	Probable
30N/03W-04L01M	DWR	Domestic	Semi-confined	Ttu	Probable
30N/03W-04M01M	DWR	Irrigation	Semi-confined	Ttu	Probable
30N/03W-06J01M	DWR	Irrigation	Semi-confined	Ttu	Probable
30N/03W-06K01M	90501	Domestic	Unconfined	Ttu	Possible
30N/03W-18F02M	5116	Domestic	Unconfined	Ttu	Definite
30N/03W-29K01M	None on file	Domestic	Unconfined	Ttu	Probable
30N/03W-30N01M	None on file	Abandoned	Semi-confined	Tte	Possible
30N/04W-03Q01M	None on file	Domestic	Semi-confined	Tte	Possible
30N/04W-05K01M	7127	Industrial	Composite	Tte+Ttu	Definite
30N/04W-06B03M	On file, no number	Domestic & Indust.	Composite	Tte+Ttu	Probable
30N/04W-15R03M	None on file	Municipal	Semi-confined	Tte	Probable
30N/04W-23G01M	On file, no number	Industrial	Confined	Tte+Ttu	Possible
30N/05W-02Q01M	71494	Domestic	Semi-confined	Tte	Probable
30N/05W-05Q01M	52083	Domestic & Irrig.	Confined	Tte	Probable
30N/05W-23D01M	60977	Domestic	Semi-confined	Tte	Probable
31N/03W-06H01M	None on file	Domestic	Semi-confined	Ttu	Possible
31N/03W-10J01M	None on file	Domestic	Semi-confined	Ttu	Possible
31N/03W-18B01M	On file, no number	Stock	Semi-confined	Ttu	Probable
31N/03W-24C01M	None on file	Domestic	Semi-confined	Ttu	Possible
31N/03W-24C02M	116048	Domestic	Semi-confined	Ttu	Definite
31N/03W-28L01M	None on file	Domestic & Irrig.	Semi-confined	Ttu	Possible
31N/03W-29N01M	On file, no number	Abandoned	Semi-confined	Ttu	Probable
31N/04W-09D01M	None on file	Domestic	Semi-confined	Ttu	Possible

Table 3 (continued)
Well Qualification for Monitoring Wells in the Redding Basin

State Well Number	Well Completion Report Number	Well Use	Groundwater Body	Hydrogeologic Units	Confidence
31N/04W-12B01M	None on file	Domestic	Semi-confined	Ttu	Possible
31N/04W-15K01M	On file, no number	Irrigation	Composite	Ttu	Probable
31N/04W-16H01M	None on file	Observation	Semi-confined	Ttu	Probable
31N/04W-16M01M	33471	Domestic	Semi-confined	Ttu	Probable
31N/04W-25Q01M	On file, no number	Observation	Confined	Ttu	Probable
31N/04W-27P01M	On file, no number	Irrigation	Semi-confined	Ttu	Probable
31N/04W-29R02M	None on file	Domestic	Unconfined	Ttu	Possible
32N/04W-33G01M	16909	Domestic	Semi-confined	Ttu	Probable

Hydrogeologic Units

Tte - Tehama Formation
Ttu - Tuscan Formation

Groundwater Body

Unconfined - Represents the free groundwater level in the uppermost zone of saturation.
Semi-confined - Represents a water level that locally appears confined but regionally is unconfined.
Confined - Represents the pieziometric surface of an aquifer under pressure.
Composite - Represents a water level that includes one or more confined levels and the unconfined groundwater level.

Confidence Rating

Definite - Know well depth & perforated interval, have complete Well Completion Report & good local geology.
Probable - Know well depth, have partial Well Completion Report & good local geology.
Possible - Know well depth, have poor local geology and/or uncertain well

Figure 2
Geologic Formations in the in the Redding Basin

GEOLOGIC AGE			GEOLOGIC FORMATION	STRATIGRAPHY	APPROXIMATE THICKNESS IN FEET	PHYSICAL CHARACTERISTICS	WATER-BEARING CHARACTERISTICS
CENOZOIC	QUATERNARY	RECENT	STREAM CHANNEL ALLUVIUM	Qsc	0-15	Unconsolidated clay, silt, sand and gravel	Highly permeable, good recharge
			ALLUVIUM	Qal	0-15	Mostly floodplain silts and sands underlain by gravel	Moderately permeable
		PLEISTOCENE	MODESTO FORMATION	Qm	0-15	Poorly sorted fluvial deposits on terraces	Moderately to highly permeable with good recharge
			RIVER BANK FORMATION	Qr	0-15	Poorly sorted fluvial deposits on terraces	Moderately permeable with clay layers
			RED BLUFF FORMATION	Qrb	0-15	Clayey, poorly sorted reddish gravel with hardpans	Poorly permeable contains perched water
	TERTIARY	PLIOCENE	TUSCAN AND TEHAMA FORMATIONS	Ttu, Tte	0-2000	TUSCAN: Semi-consolidated beds of tuff-breccia, tuff, clay, silt, sand, and gravel derived from the Cascade Range TEHAMA: Semi-consolidated beds and lenses of clay, silt, sand, and gravel derived from the Coast Ranges.	Volcanic sand and gravel moderate to highly permeable, mudflows poorly permeable Gravel and sand lenses highly permeable, silt and clay lenses poorly permeable
			NOMLAKI TUFF MEMBER	Tn	0-60	White tuffs and tuff breccias	Poorly permeable

Groundwater Level Measurements

Water levels in all wells are measured using a steel tape or electric probe. All measurements of water levels should be accurate to the nearest tenth of a foot. The groundwater surface elevations presented in this report are calculated using the water level measurements and ground surface elevations at each well. Most of the ground surface elevations were estimated from USGS 7.5 quadrangles. Accuracy of these elevations is dependent on the contour intervals of the maps, which range from 5 to 40 feet.

Groundwater level data for each well are depicted on the hydrographs in Appendix A. The hydrographs represent water level data through July 1996 and are organized by township from south to north and by range from east to west.

On the hydrographs, solid circles (dots) depict actual measured groundwater elevations. Individual measurements that are questionable are identified by a number of other symbols identifying the questionable measurement type. Solid lines connecting individual measurements are interpolations of the change in groundwater elevation between measurements. Discontinuities on the graphs indicate an expected measurement is missing. Ground surface elevations at the wells are represented as long, solid horizontal lines.

Hydrographs representing monthly and quarterly monitoring wells have a higher concentration of data points compared to hydrographs representing semi-annual measurement wells.

Data points that appear "unusual" were checked against field records and retained to preserve the objectivity of the groundwater level records.

Groundwater Level Trends

Groundwater levels fluctuate annually in response to groundwater extractions, subsurface inflow and outflow, recharge from precipitation, stream percolation, and infiltration of applied irrigation water. Levels are usually highest in the spring and lowest in the fall. Longer term fluctuations occur when discharge exceeds or is less than recharge over several seasons. Hydrographs are graphical plots of the groundwater level measurements and illustrate annual spring to fall changes, long-term changes linked to increased or decreased groundwater extraction, or variations associated with wet or dry climatic conditions.

The Redding Basin groundwater is recharged by the Sacramento River and locally by creeks such as Clear, Cottonwood, Hooker, Battle, and Cow creeks. The groundwater is also recharged by precipitation, applied water, and subsurface inflow from the north-east and north-west. Groundwater discharges at the Sacramento River and outflows in the subsurface toward the south.

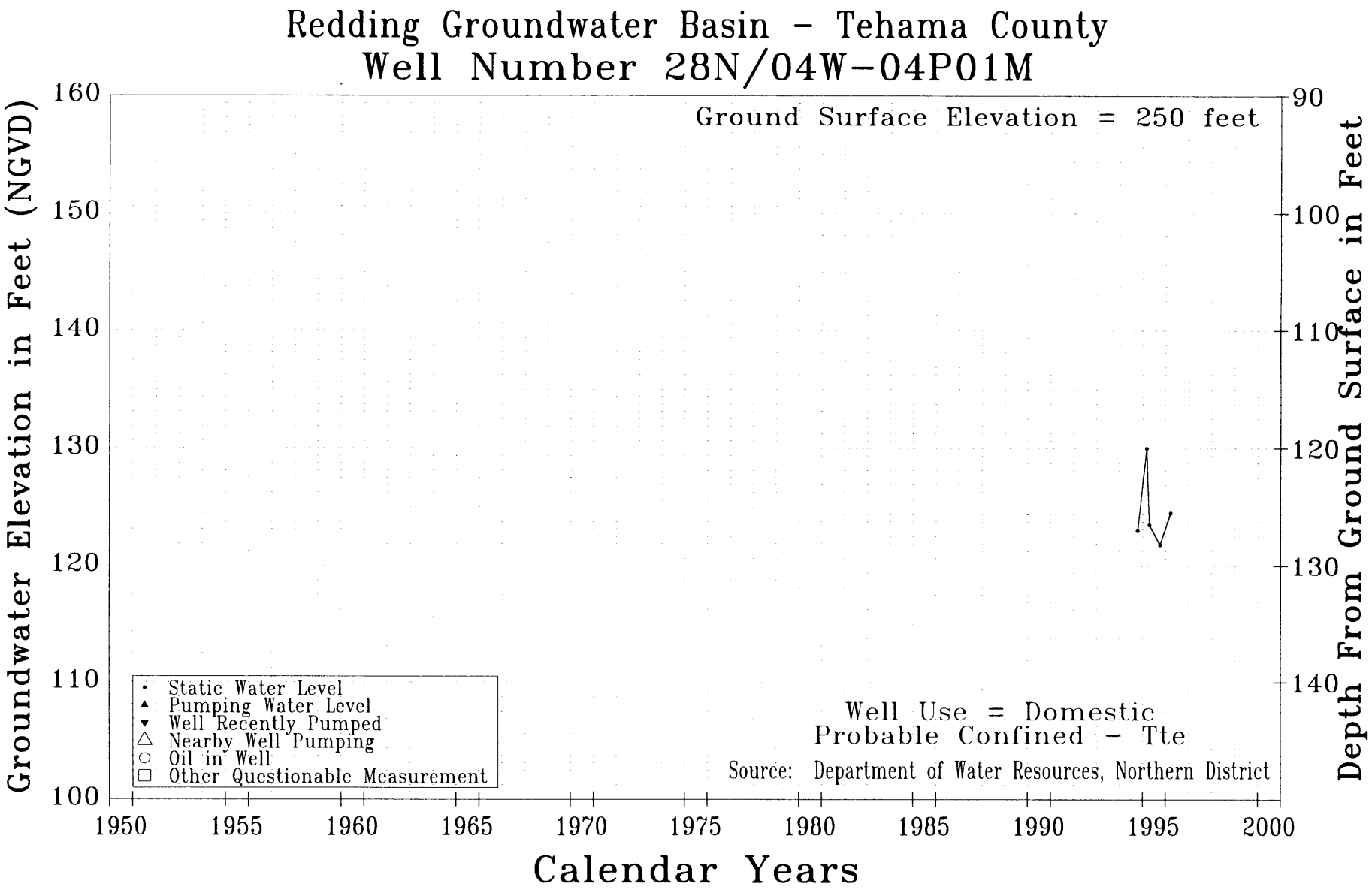
In general, the hydrographs in Appendix A show:

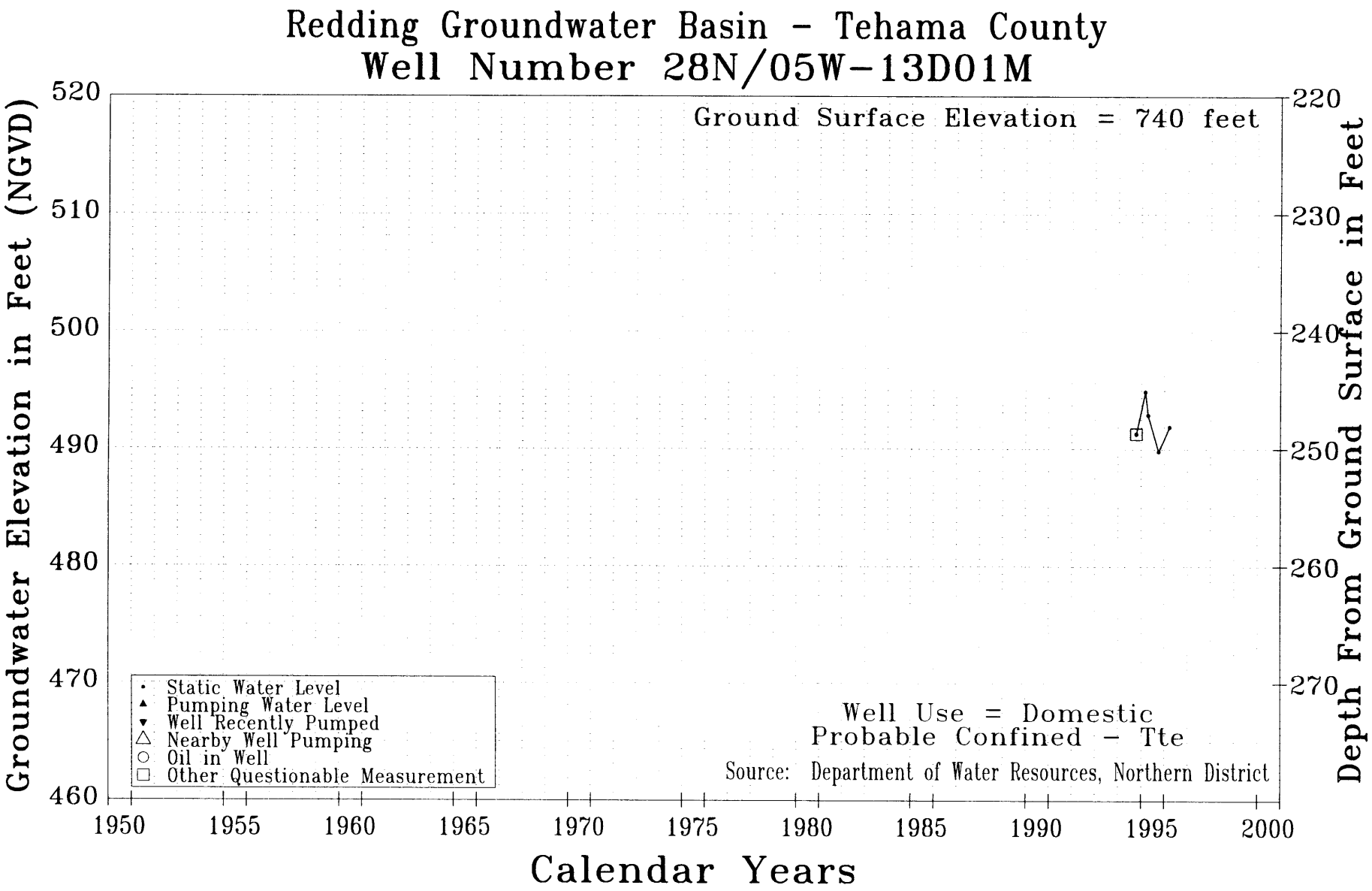
- Groundwater level declines in some of the wells are associated with the 1976 - 1977 and 1987 - 1992 drought periods.

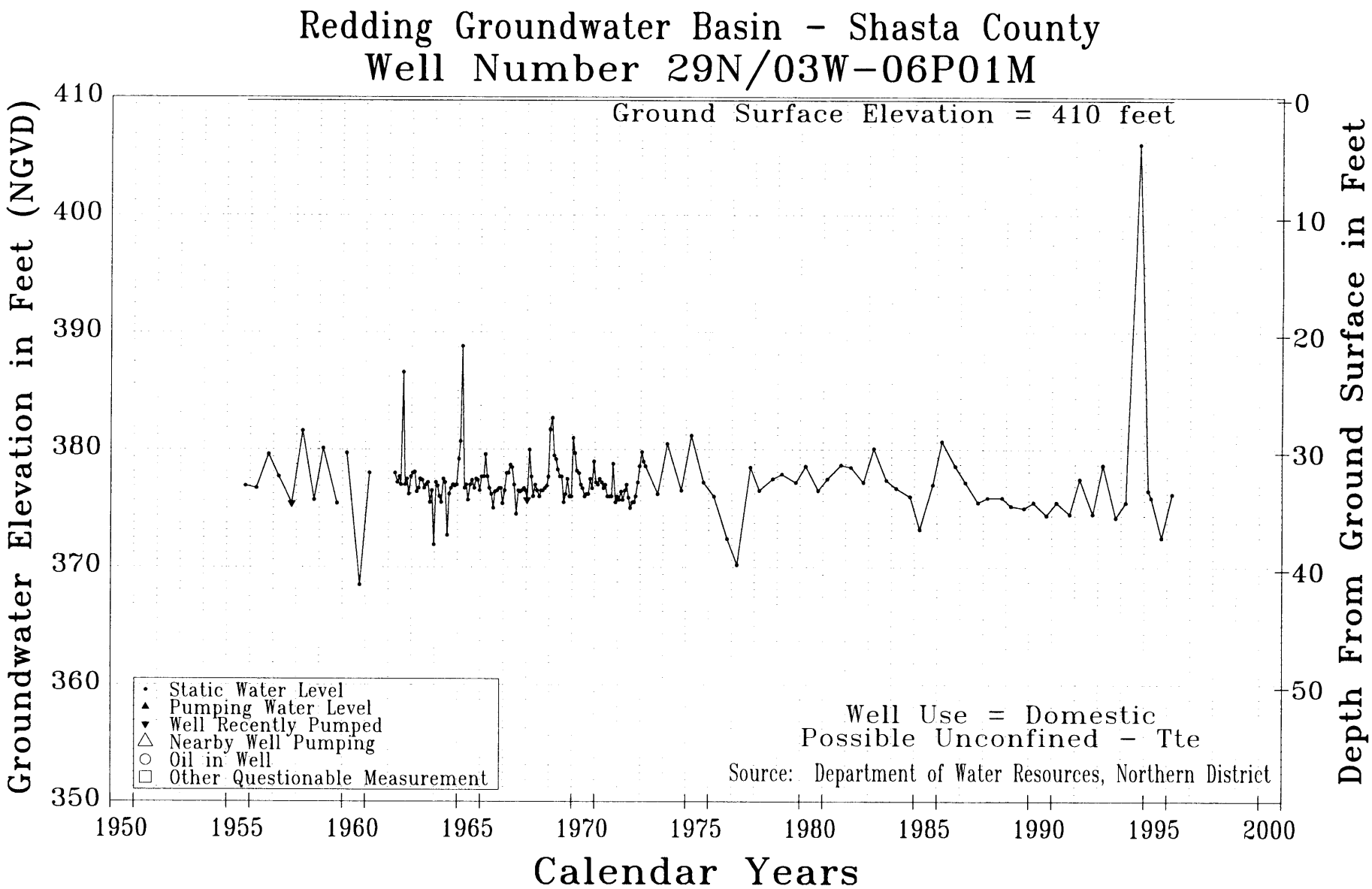
- All groundwater levels recovered from the 1976 - 1977 to pre-drought levels during the wet period in the early 1980's. Most of the groundwater levels recovered from the 1987 - 1992 drought during the wet 1992- 1993 winter and spring.

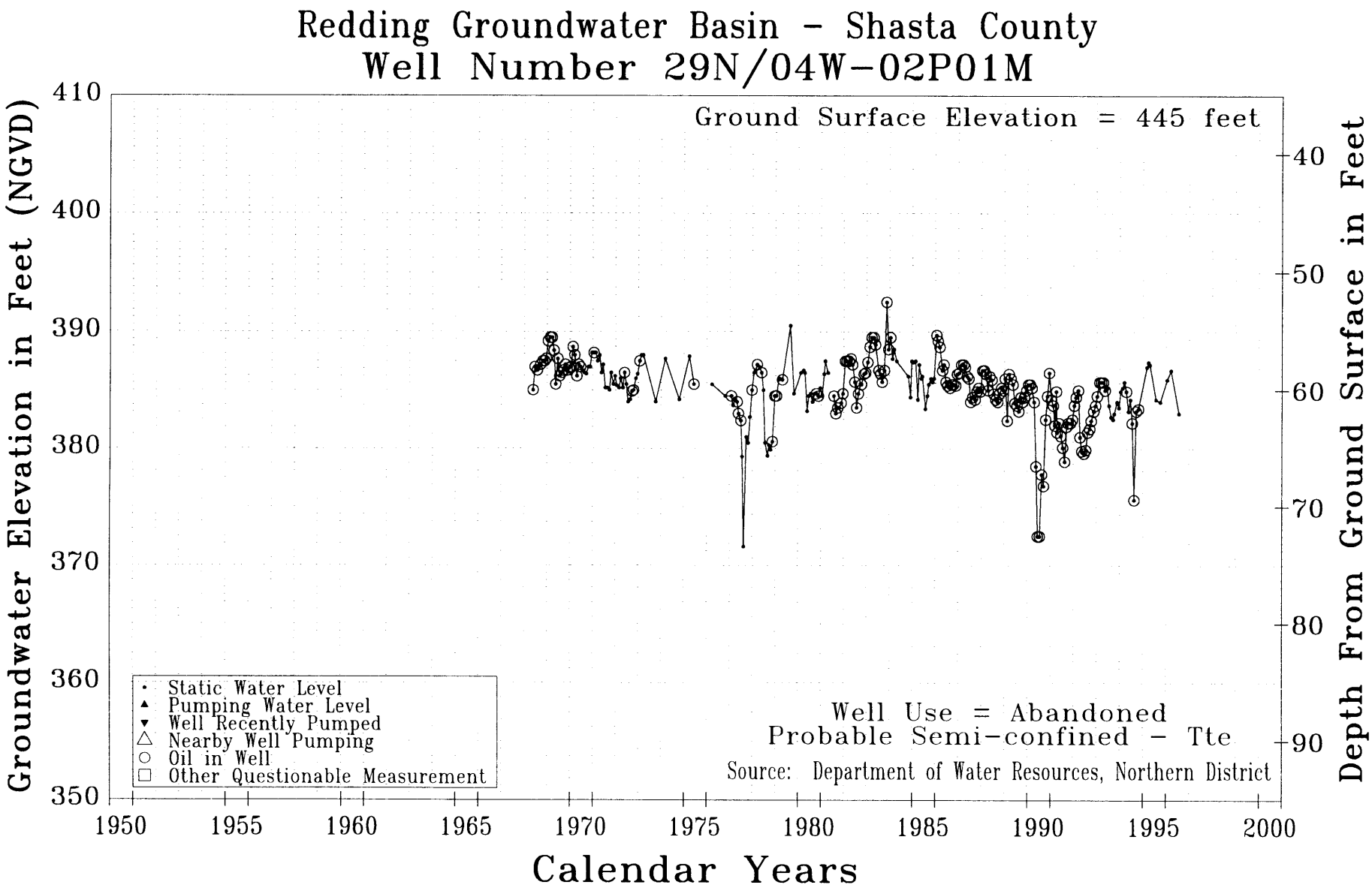
Appendix A
Hydrographs

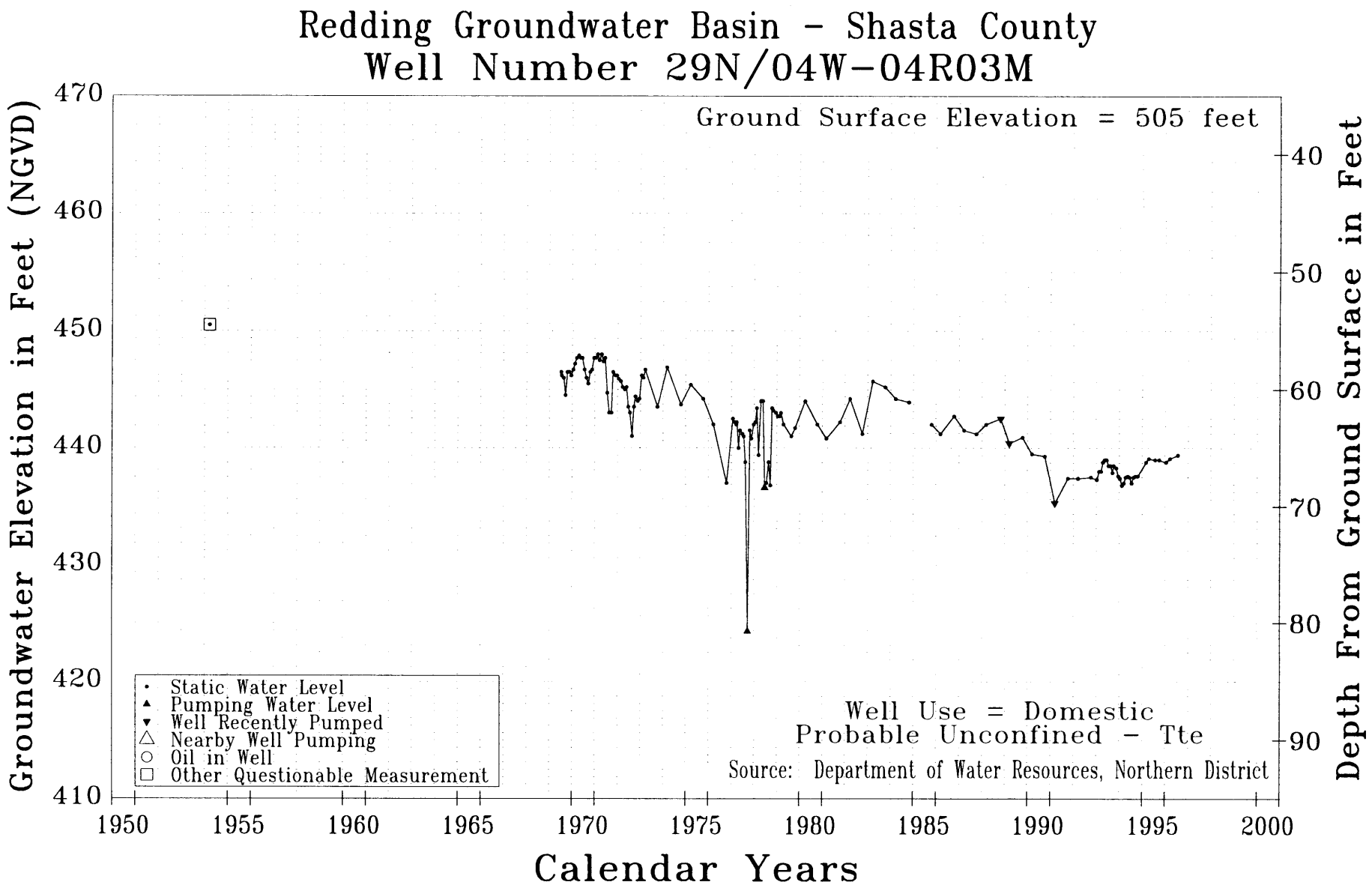
State Well Number	Page
28N/04W-04P01M	17
28N/05W-13D01M	18
29N/03W-06P01M	19
29N/04W-02P01M	20
29N/04W-04R03M	21
29N/04W-05Q01M	22
29N/04W-15E02M	23
29N/04W-27A01M	24
29N/04W-28D01M	25
29N/04W-30L01M	26
29N/04W-35B01M	27
29N/05W-07B01M	28
29N/05W-09L01M	29
29N/05W-11A02M	30
29N/05W-14L01M	31
29N/05W-16R01M	21
29N/05W-26N01M	33
30N/03W-04L01M	34
30N/03W-04M01M	35
30N/03W-06J01M	36
30N/03W-06K01M	37
30N/03W-18F02M	38
30N/03W-29K01M	39
30N/03W-30N01M	40
30N/04W-03Q01M	41
30N/04W-05K01M	42
30N/04W-06B03M	43
30N/04W-15R03M	44
30N/04W-23G01M	45
30N/05W-02Q01M	46
30N/05W-05Q01M	47
30N/05W-23D01M	48
31N/03W-06H01M	49
31N/03W-10J01M	50
31N/03W-18B01M	51
31N/03W-24C01M	52
31N/03W-24C02M	53
31N/03W-28L01M	54
31N/03W-29N01M	55
31N/04W-09D01M	56
31N/04W-12B01M	57
31N/04W-15K01M	58
31N/04W-16H01M	59
31N/04W-16M01M	60
31N/04W-25Q01M	61
31N/04W-27P01M	62
31N/04W-29R02M	63
32N/04W-33G01M	64

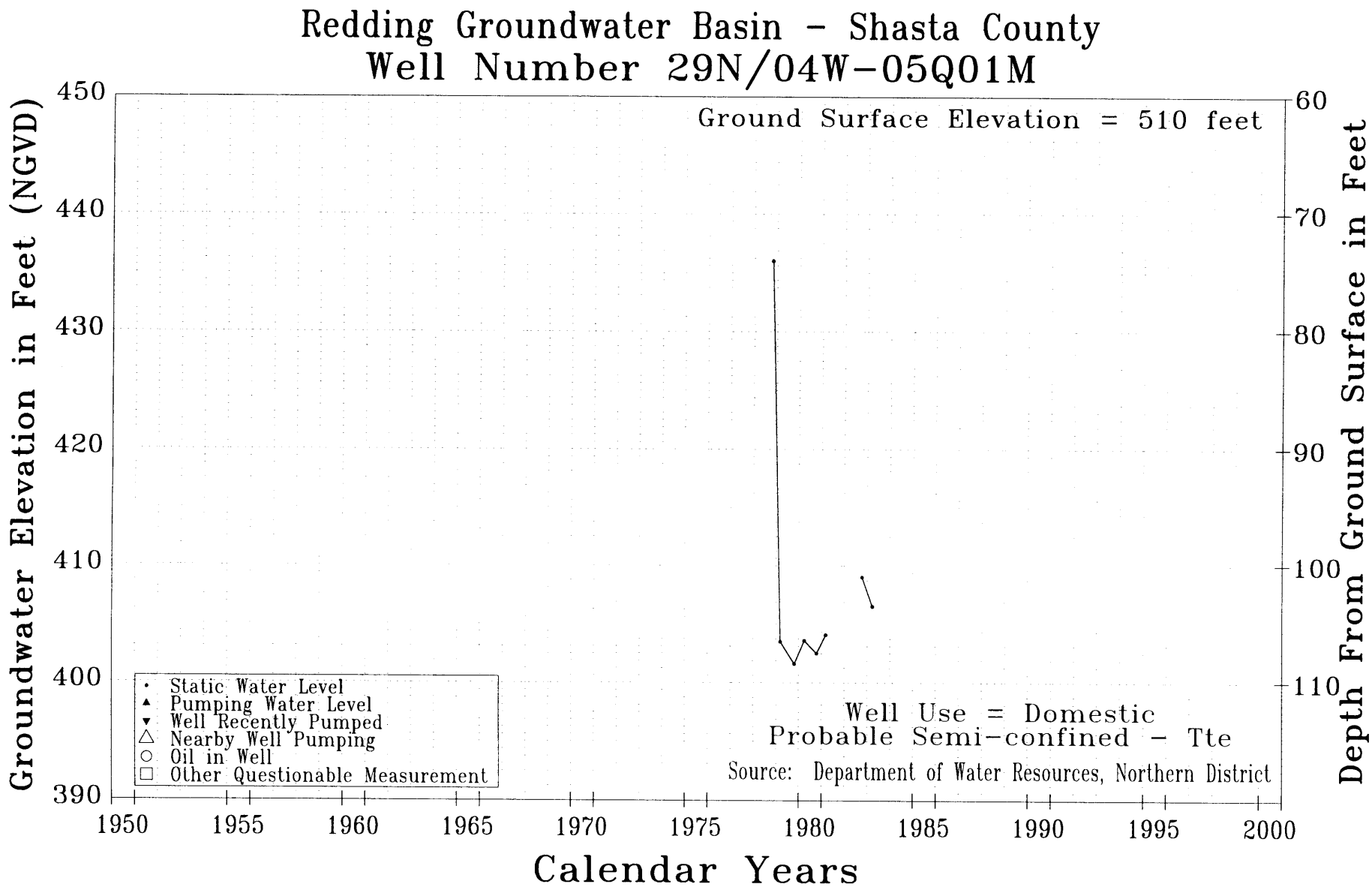

Redding Groundwater Basin - Tehama County
Well Number 28N/04W-04P01M
Ground Surface Elevation = 250 feet
Groundwater Elevation in Feet (NGVD)
160
150
140
130
120
110
100
Depth From Ground Surface in Feet
90
100
110
120
130
140
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Confined - Tte
Source: Department of Water Resources, Northern District

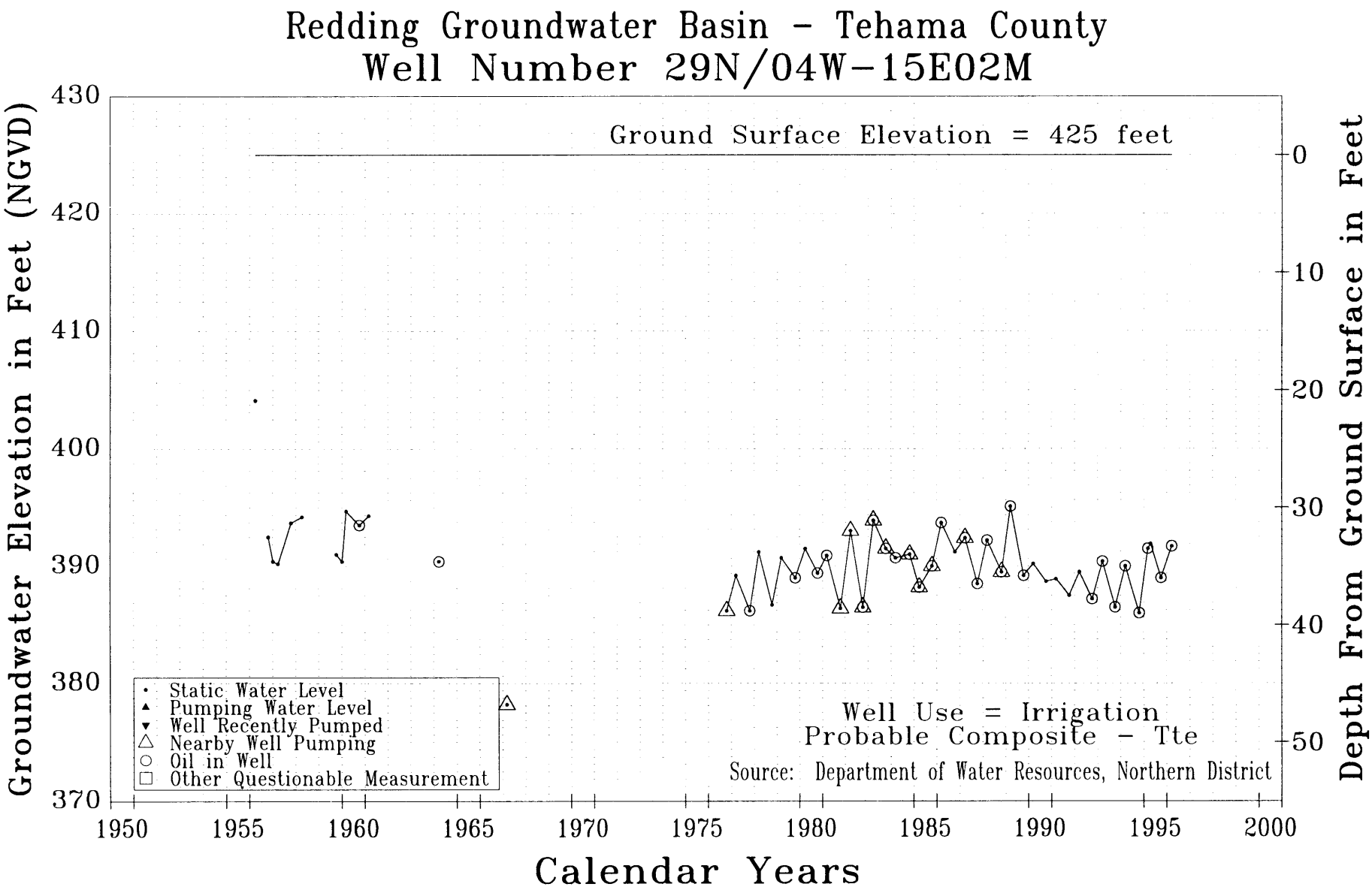

Redding Groundwater Basin - Tehama County
Well Number 28N/05W-13D01M
Ground Surface Elevation = 740 feet
Groundwater Elevation in Feet (NGVD)
520
510
500
490
480
470
460
Depth From Ground Surface in Feet
220
230
240
250
260
270
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Confined - Tte
Source: Department of Water Resources, Northern District

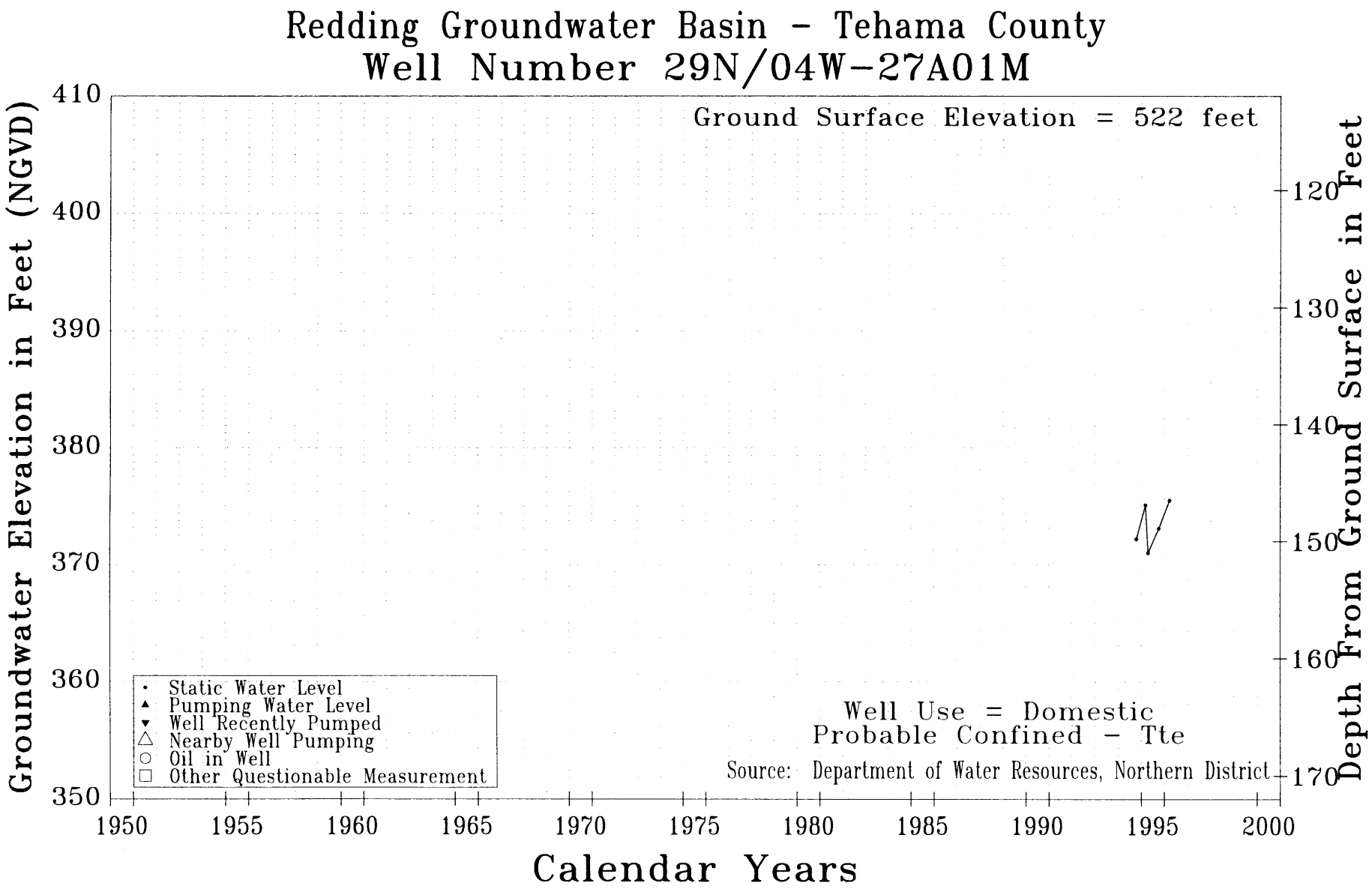

Redding Groundwater Basin - Shasta County
Well Number 29N/03W-06P01M
Ground Surface Elevation = 410 feet
Groundwater Elevation in Feet (NGVD)
410
400
390
380
370
360
350
Depth From Ground Surface in Feet
0
10
20
30
40
50
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Unconfined - Tte
Source: Department of Water Resources, Northern District

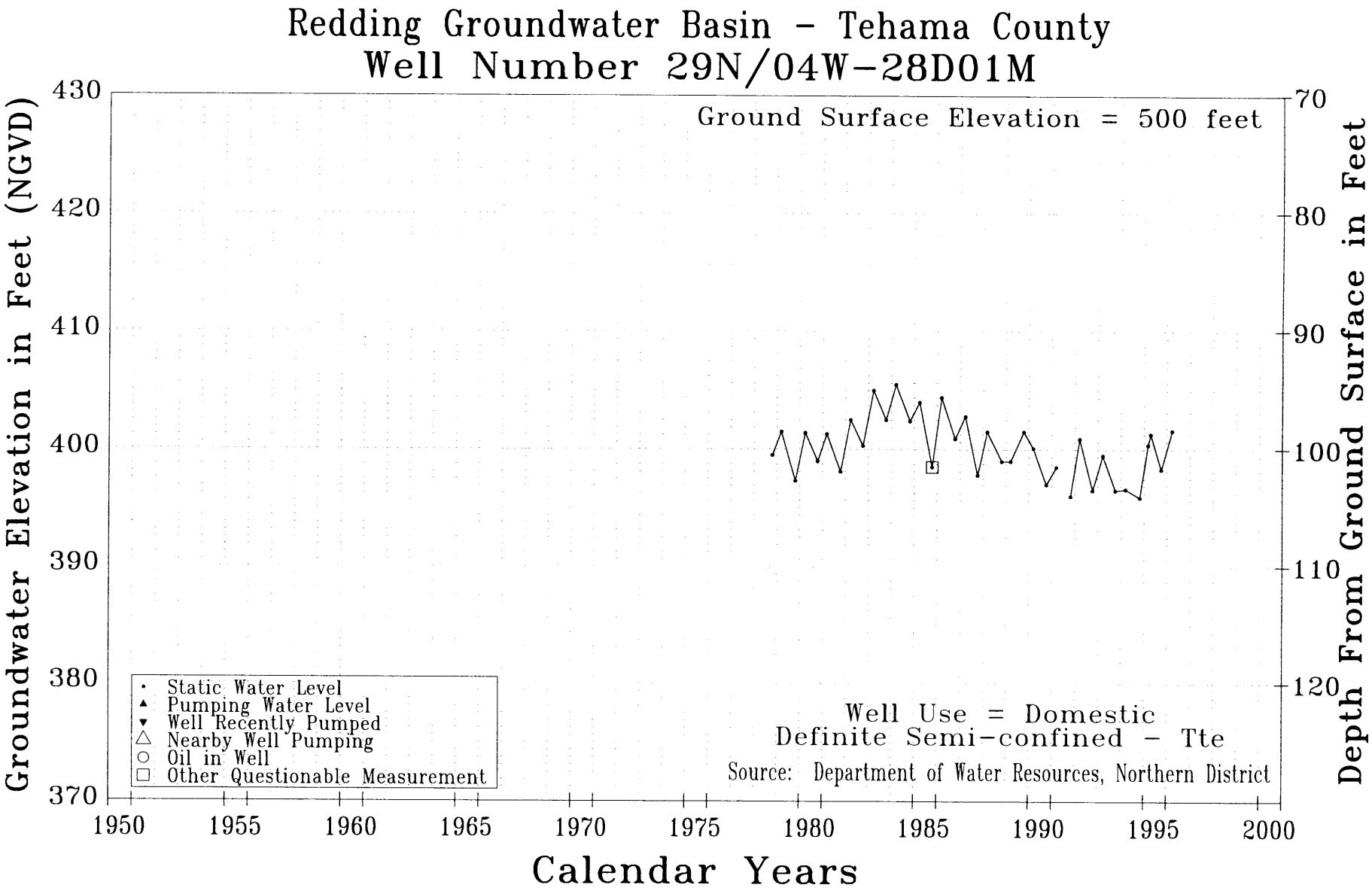

Redding Groundwater Basin - Shasta County
Well Number 29N/04W-02P01M
Ground Surface Elevation = 445 feet
Groundwater Elevation in Feet (NGVD)
410
400
390
380
370
360
350
Depth From Ground Surface in Feet
40
50
60
70
80
90
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Abandoned
Probable Semi-confined - Tte
Source: Department of Water Resources, Northern District

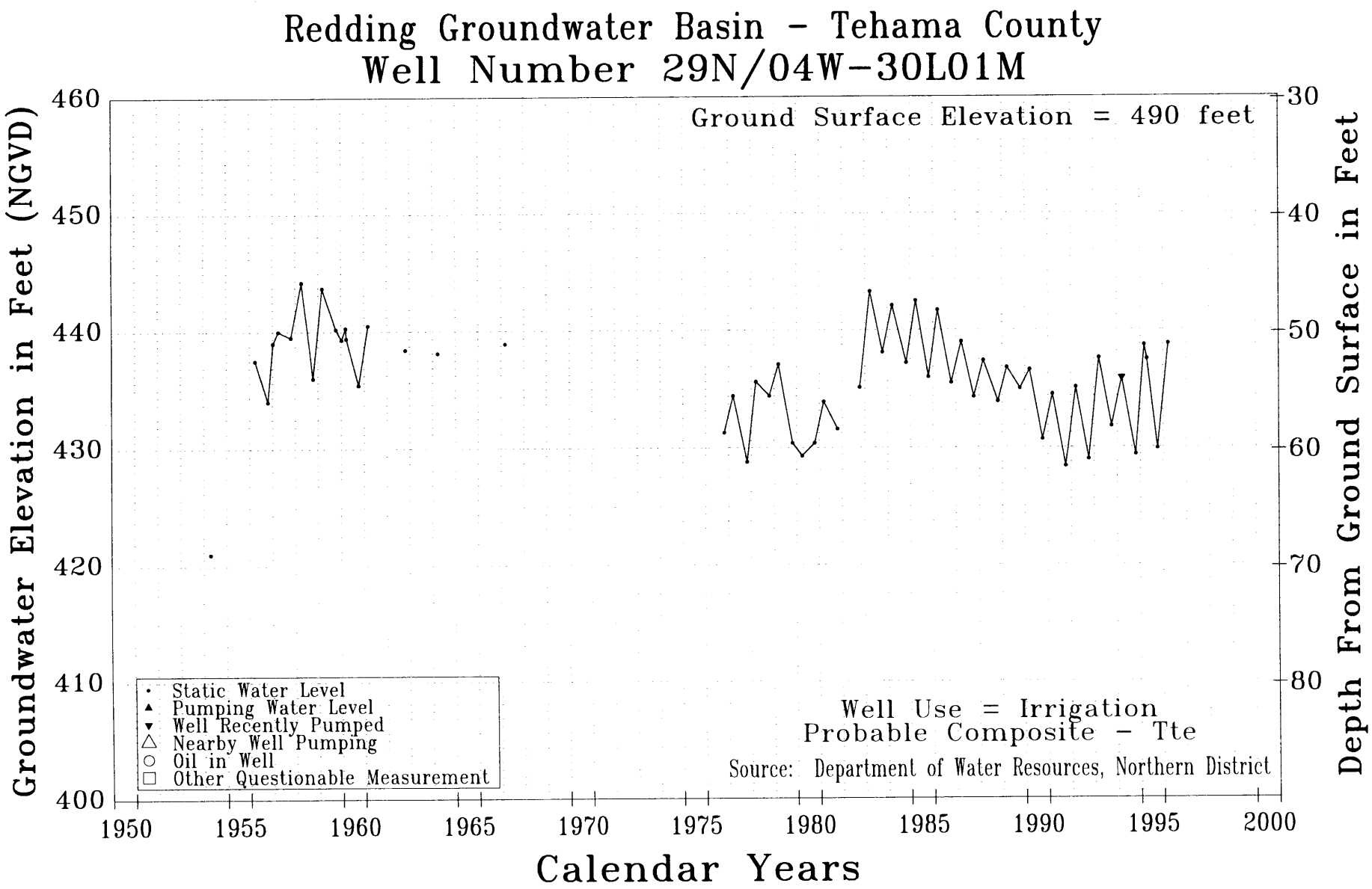

Redding Groundwater Basin - Shasta County
Well Number 29N/04W-04R03M
Ground Surface Elevation = 505 feet
Groundwater Elevation in Feet (NGVD)
470
460
450
440
430
420
410
Depth From Ground Surface in Feet
40
50
60
70
80
90
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Unconfined - Tte
Source: Department of Water Resources, Northern District

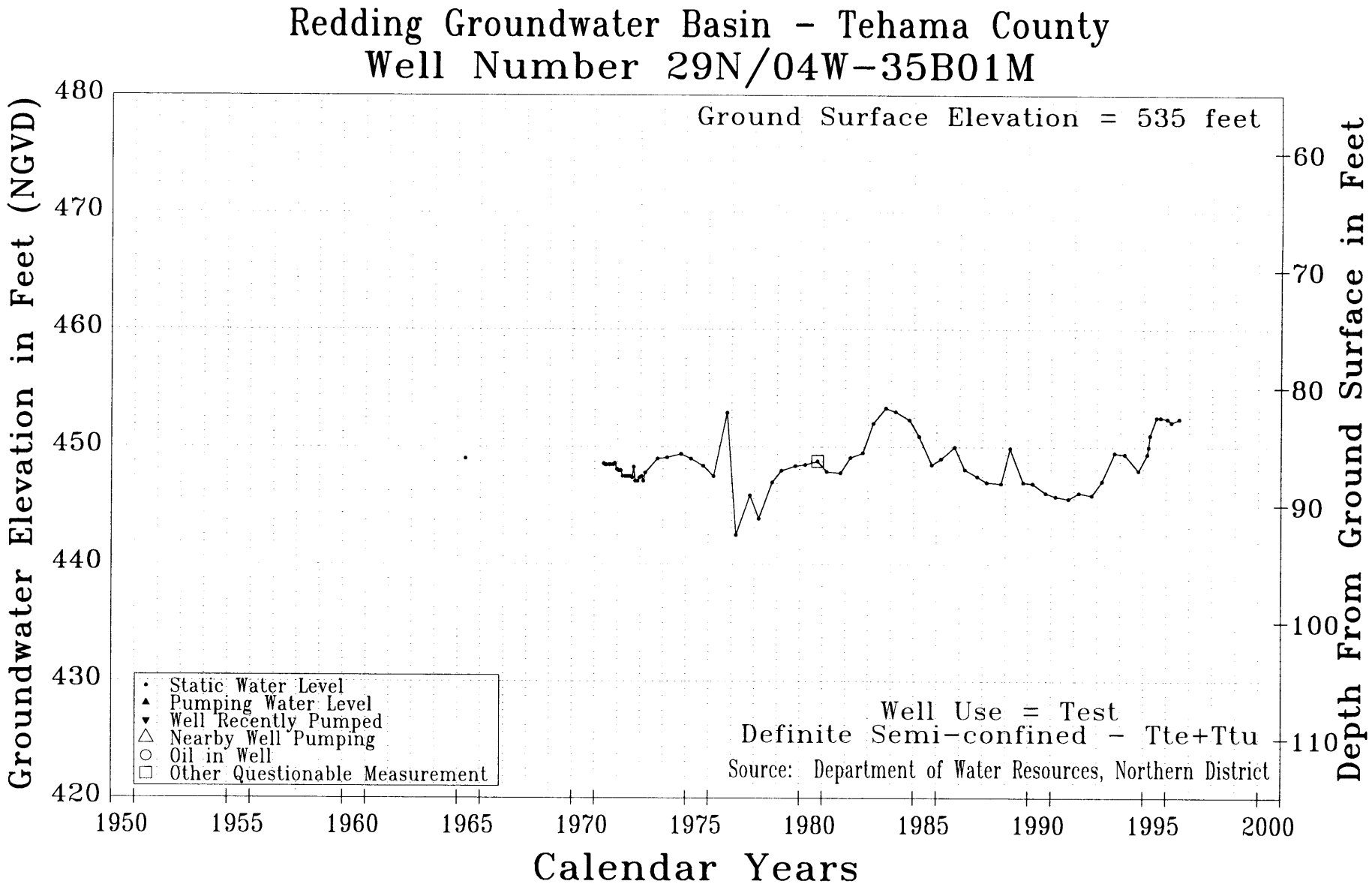

Redding Groundwater Basin - Shasta County
Well Number 29N/04W-05Q01M
Ground Surface Elevation = 510 feet
Groundwater Elevation in Feet (NGVD)
450
440
430
420
410
400
390
Depth From Ground Surface in Feet
60
70
80
90
100
110
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Semi-confined - Tte
Source: Department of Water Resources, Northern District

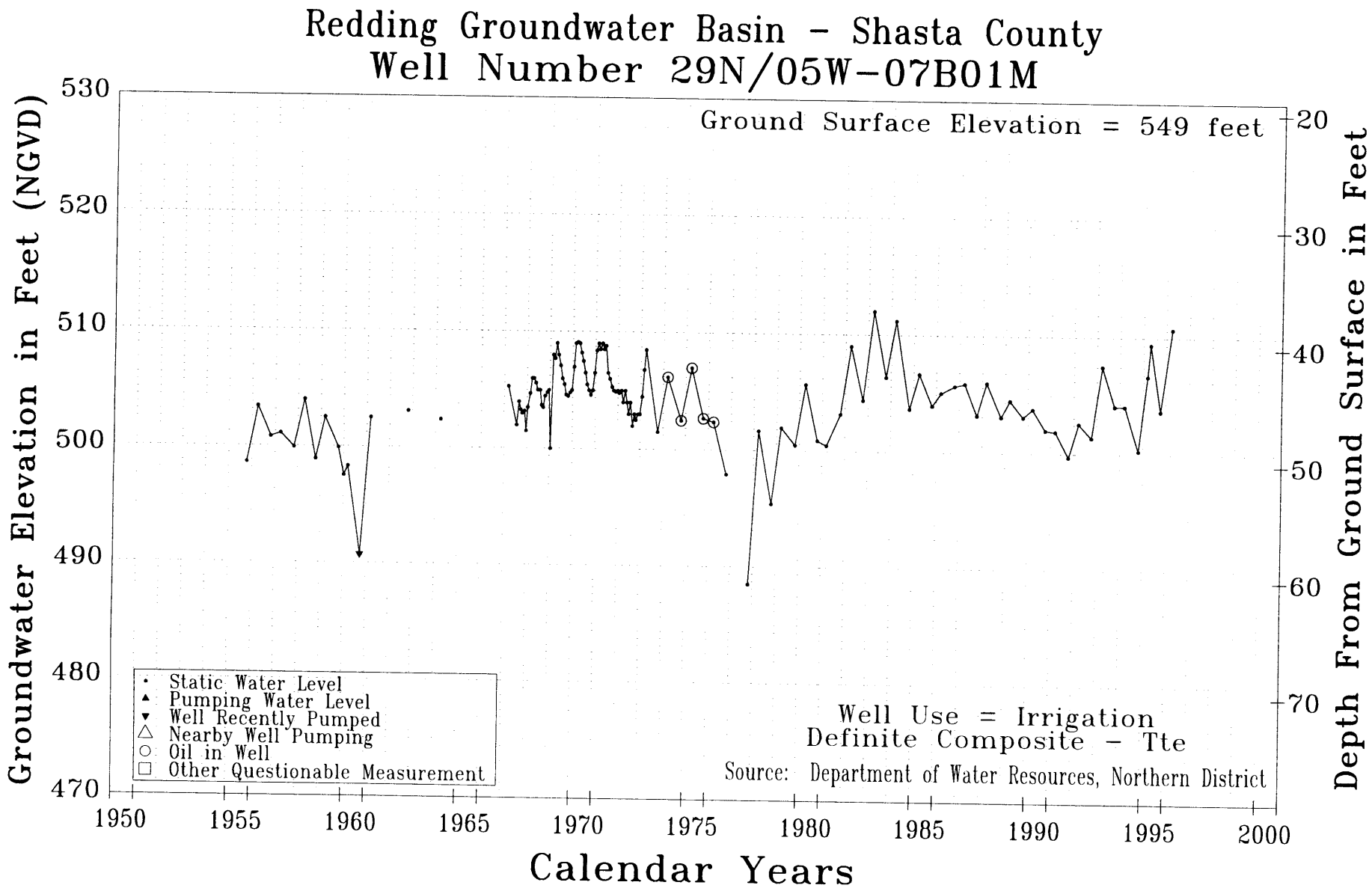

Redding Groundwater Basin - Tehama County
Well Number 29N/04W-15E02M
Ground Surface Elevation = 425 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
0
10
20
30
40
50
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Composite - Tte
Source: Department of Water Resources, Northern District

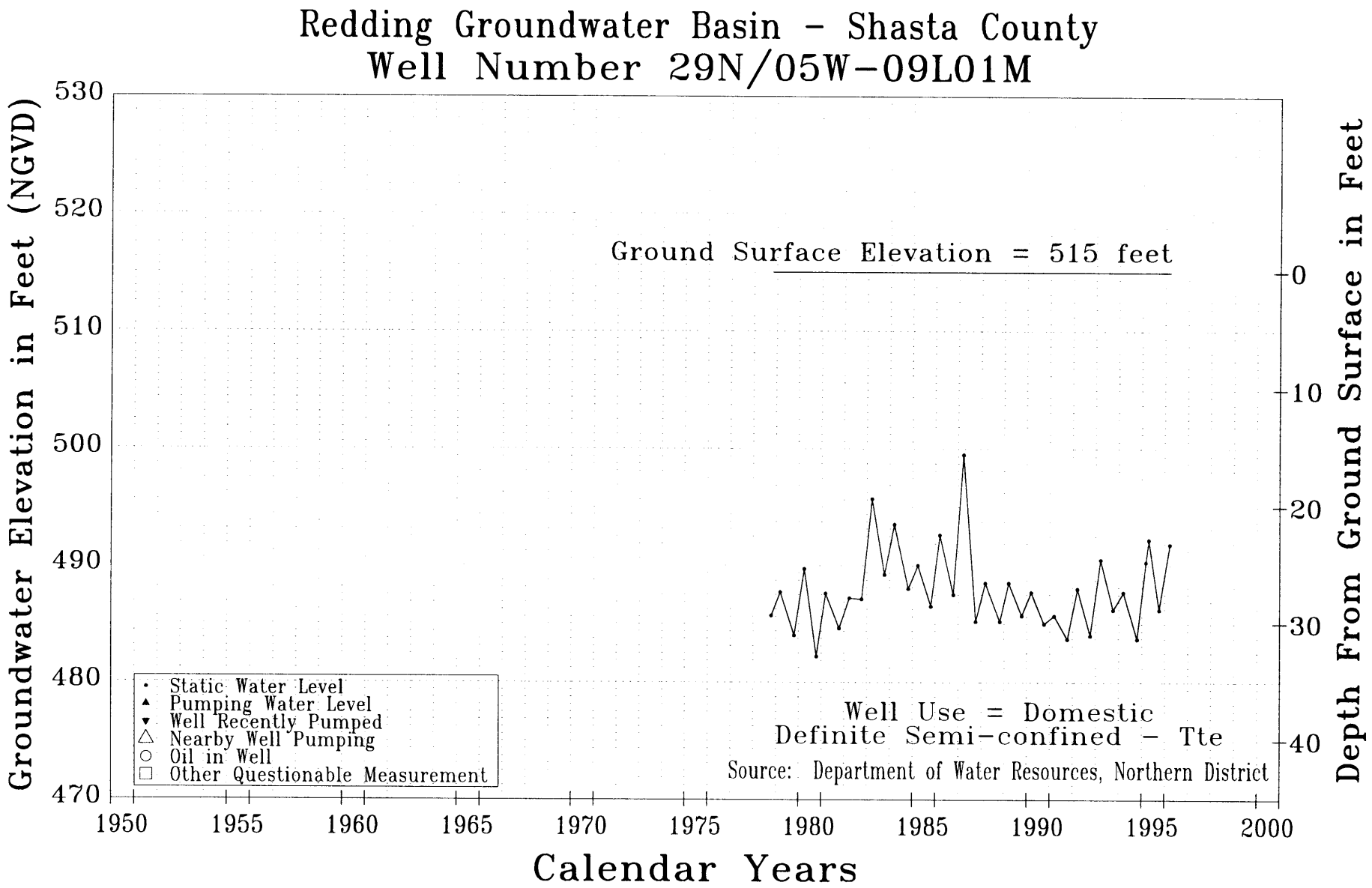

Redding Groundwater Basin - Tehama County
Well Number 29N/04W-27A01M
Ground Surface Elevation = 522 feet
Groundwater Elevation in Feet (NGVD)
410
400
390
380
370
360
350
Depth From Ground Surface in Feet
120
130
140
150
160
170
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Confined - Tte
Source: Department of Water Resources, Northern District

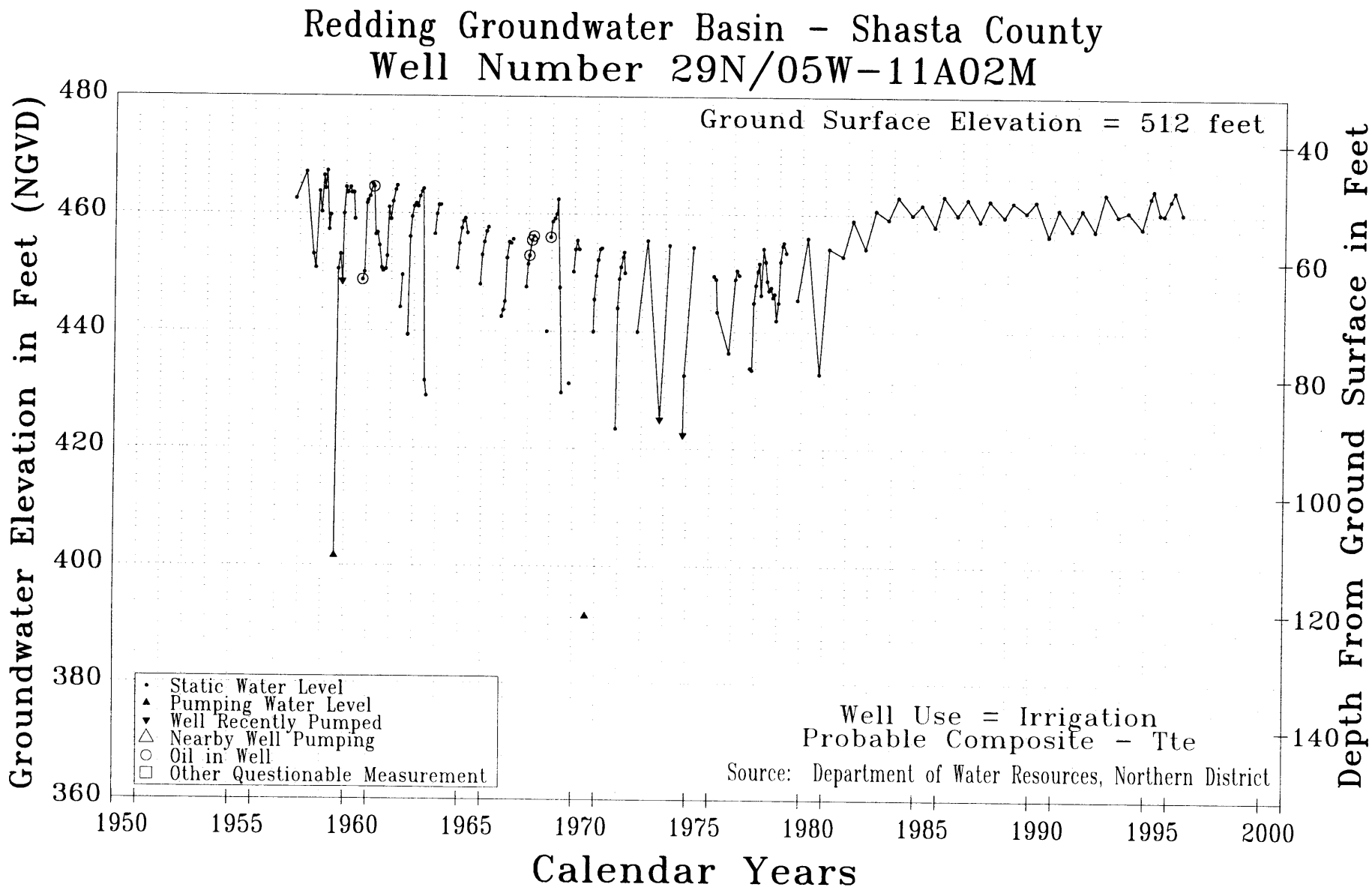

Redding Groundwater Basin - Tehama County
Well Number 29N/04W-28D01M
Ground Surface Elevation = 500 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
70
80
90
100
110
120
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Definite Semi-confined - Tte
Source: Department of Water Resources, Northern District

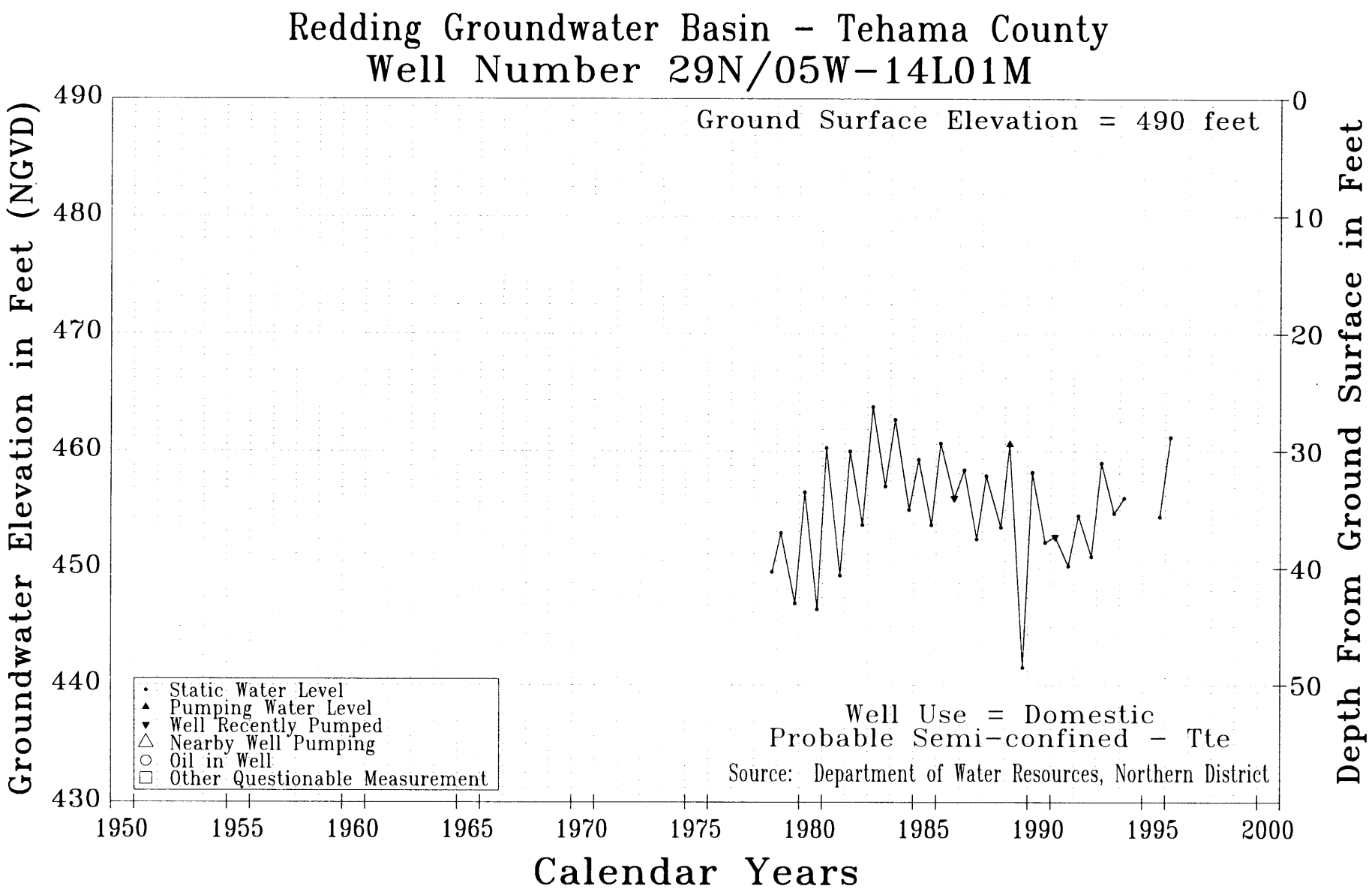

Redding Groundwater Basin - Tehama County
Well Number 29N/04W-30L01M
Ground Surface Elevation = 490 feet
Groundwater Elevation in Feet (NGVD)
460
450
440
430
420
410
400
Depth From Ground Surface in Feet
30
40
50
60
70
80
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Composite - Tte
Source: Department of Water Resources, Northern District

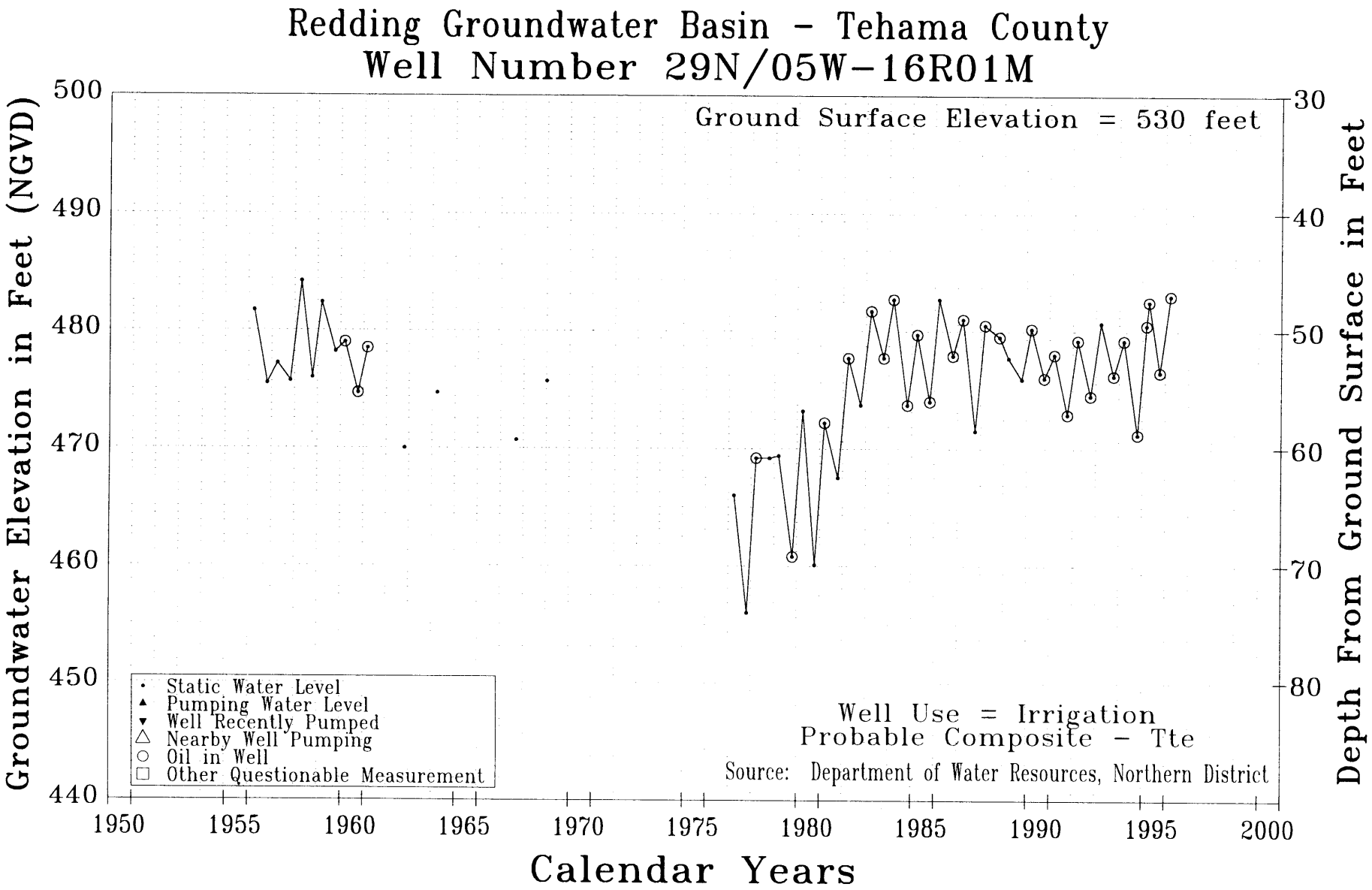

Redding Groundwater Basin - Tehama County
Well Number 29N/04W-35B01M
Ground Surface Elevation = 535 feet
Groundwater Elevation in Feet (NGVD)
480
470
460
450
440
430
420
Depth From Ground Surface in Feet
60
70
80
90
100
110
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Test
Definite Semi-confined - Tte+Ttu
Source: Department of Water Resources, Northern District

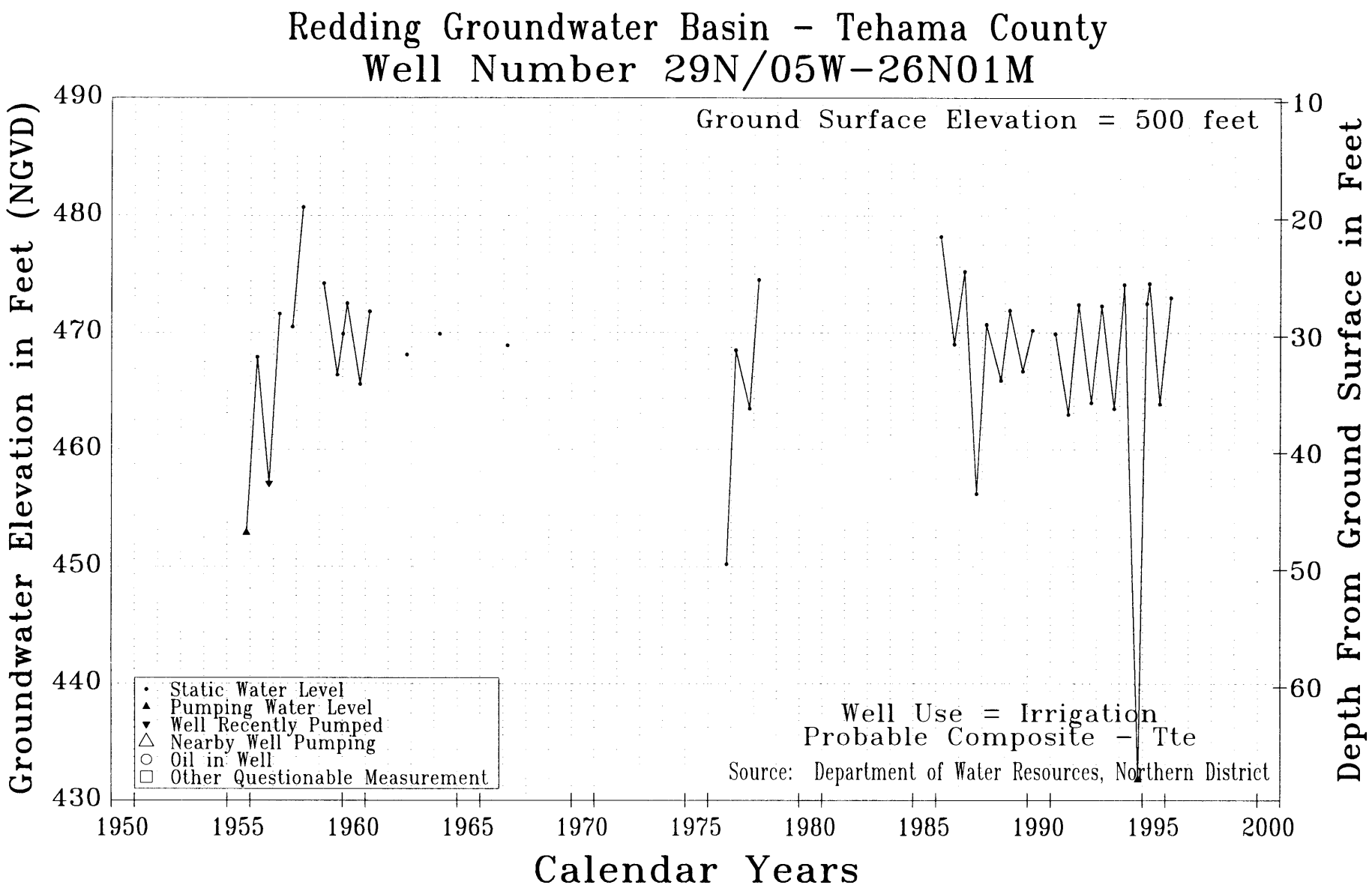

Redding Groundwater Basin - Shasta County
Well Number 29N/05W-07B01M
Ground Surface Elevation = 549 feet
Groundwater Elevation in Feet (NGVD)
530
520
510
500
490
480
470
Depth From Ground Surface in Feet
20
30
40
50
60
70
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Definite Composite - Tte
Source: Department of Water Resources, Northern District

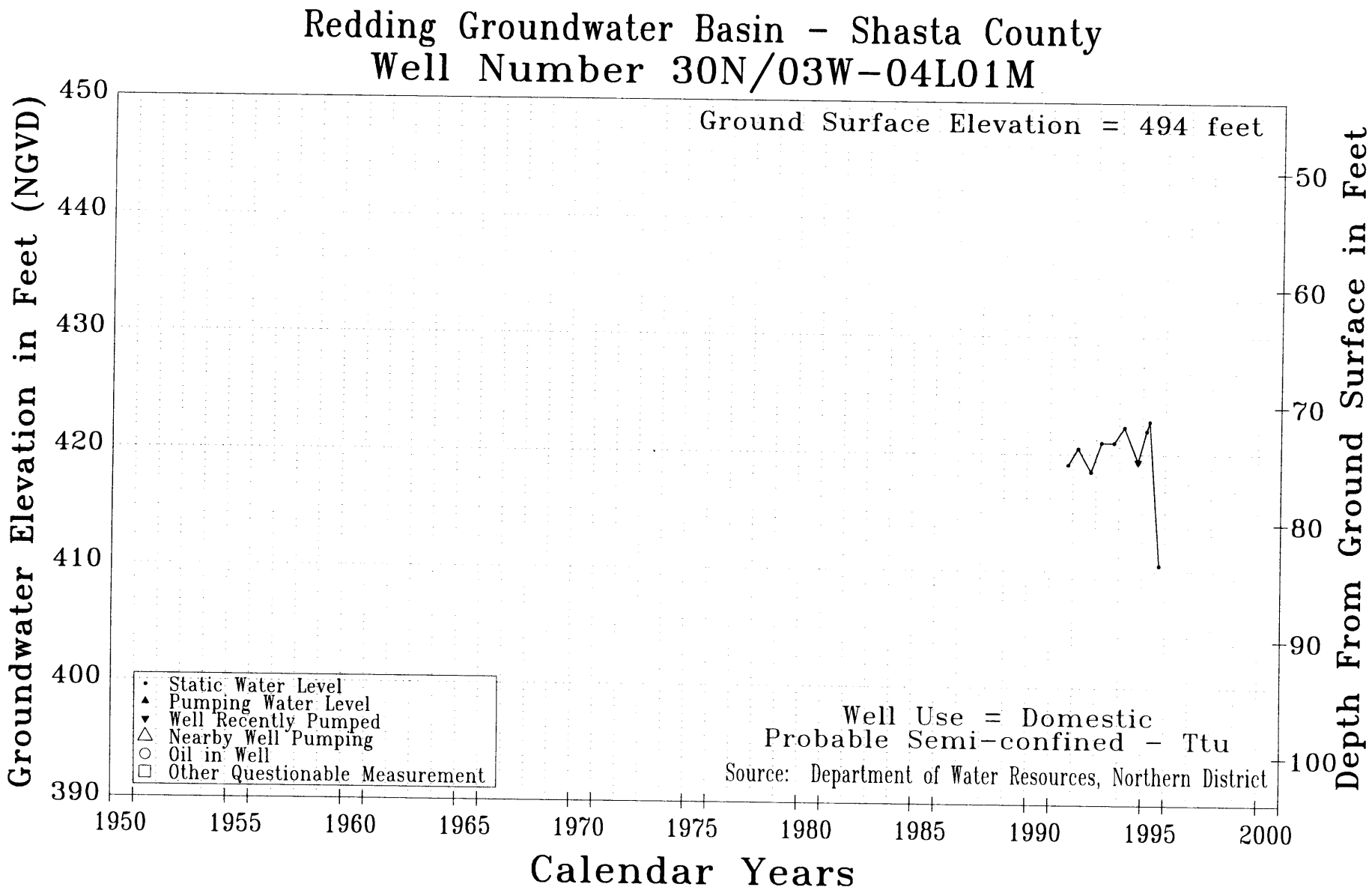

Redding Groundwater Basin - Shasta County
Well Number 29N/05W-09L01M
Groundwater Elevation in Feet (NGVD)
530
520
510
500
490
480
470
Depth From Ground Surface in Feet
0
10
20
30
40
Ground Surface Elevation = 515 feet
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Definite Semi-confined - Tte
Source: Department of Water Resources, Northern District
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years

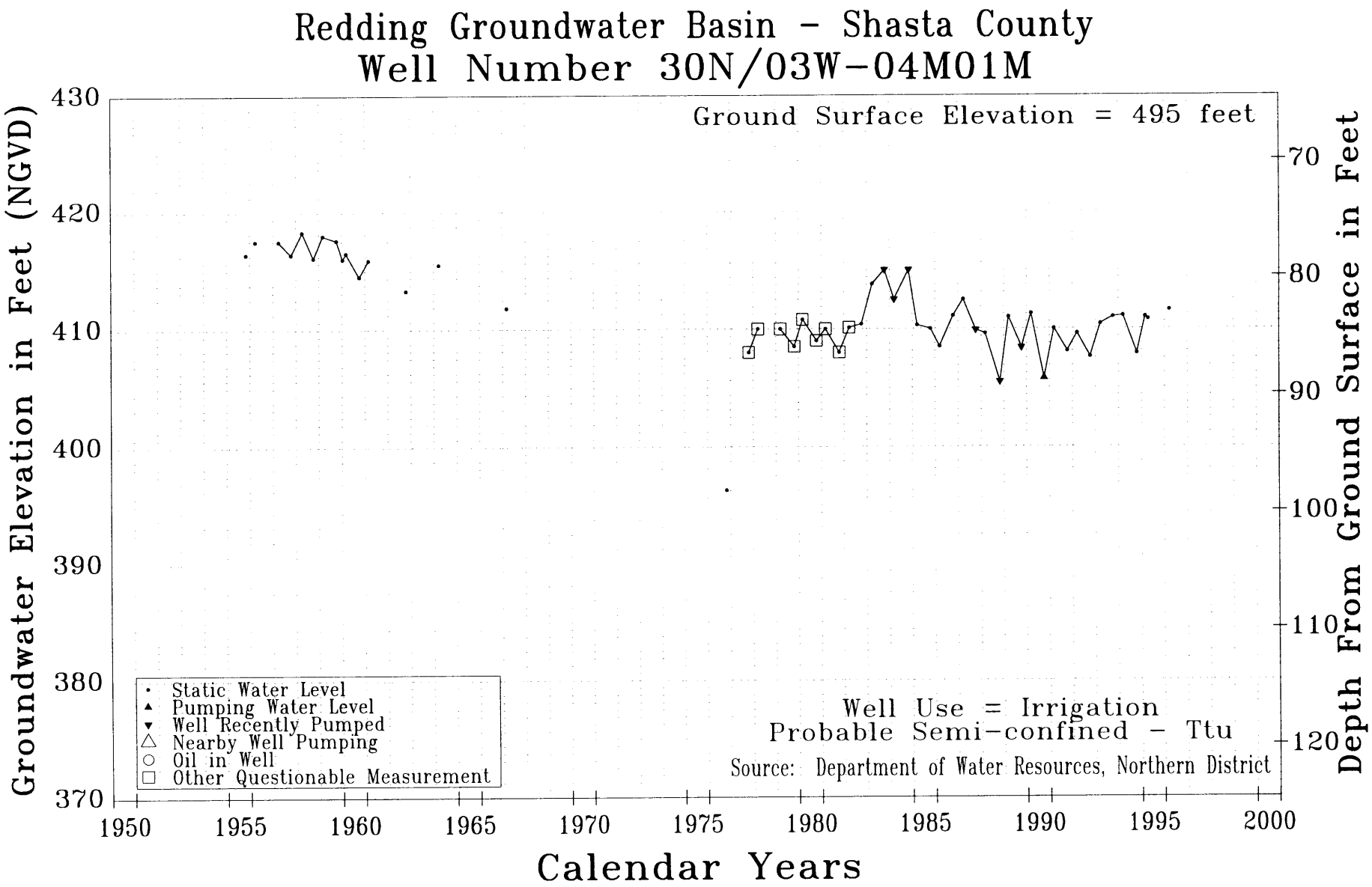

Redding Groundwater Basin - Shasta County
Well Number 29N/05W-11A02M
Ground Surface Elevation = 512 feet
Groundwater Elevation in Feet (NGVD)
480
460
440
420
400
380
360
Depth From Ground Surface in Feet
40
60
80
100
120
140
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Composite - Tte
Source: Department of Water Resources, Northern District

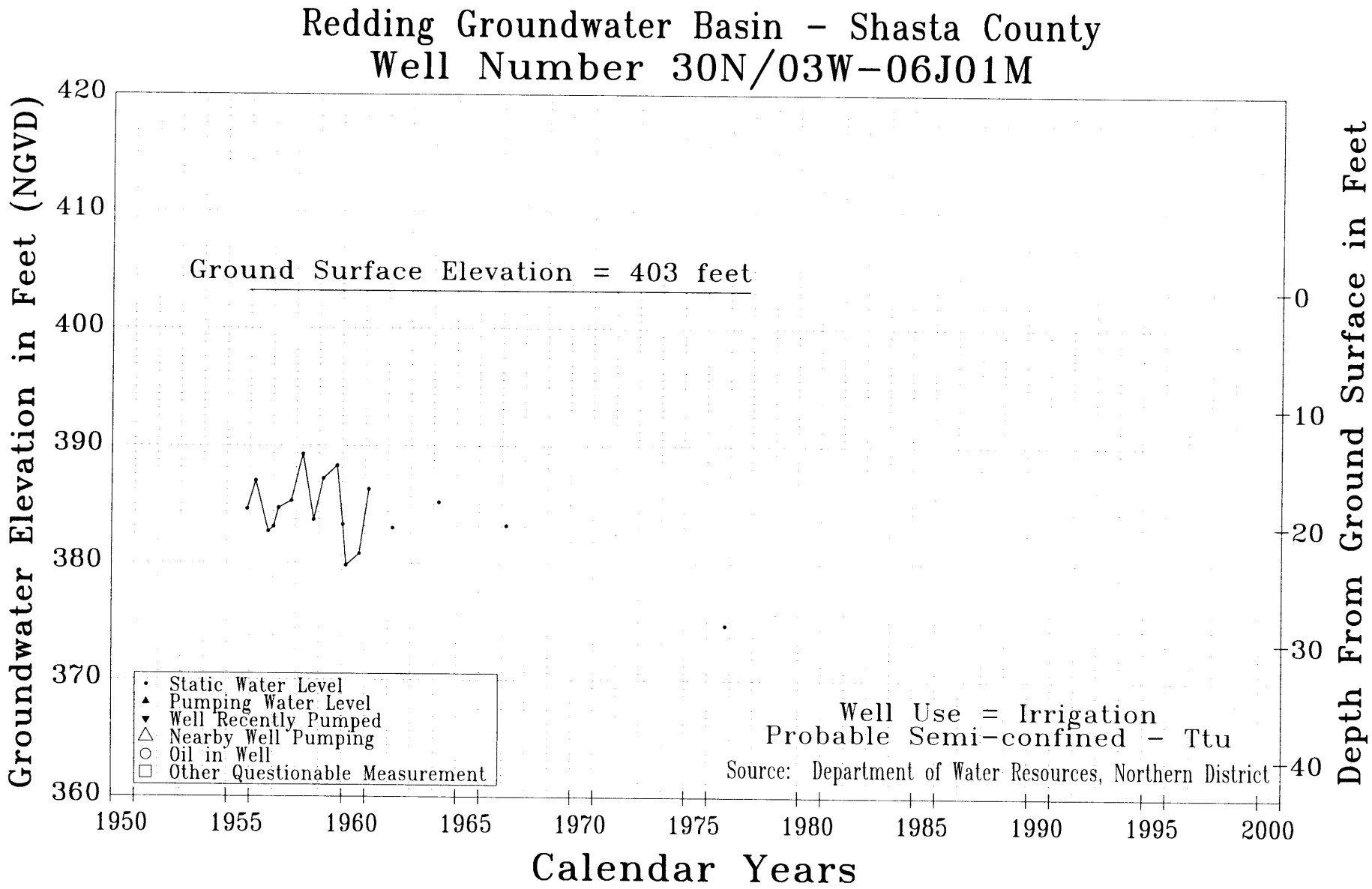

Redding Groundwater Basin - Tehama County
Well Number 29N/05W-14L01M
Ground Surface Elevation = 490 feet
Groundwater Elevation in Feet (NGVD)
490
480
470
460
450
440
430
Depth From Ground Surface in Feet
0
10
20
30
40
50
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Semi-confined - Tte
Source: Department of Water Resources, Northern District

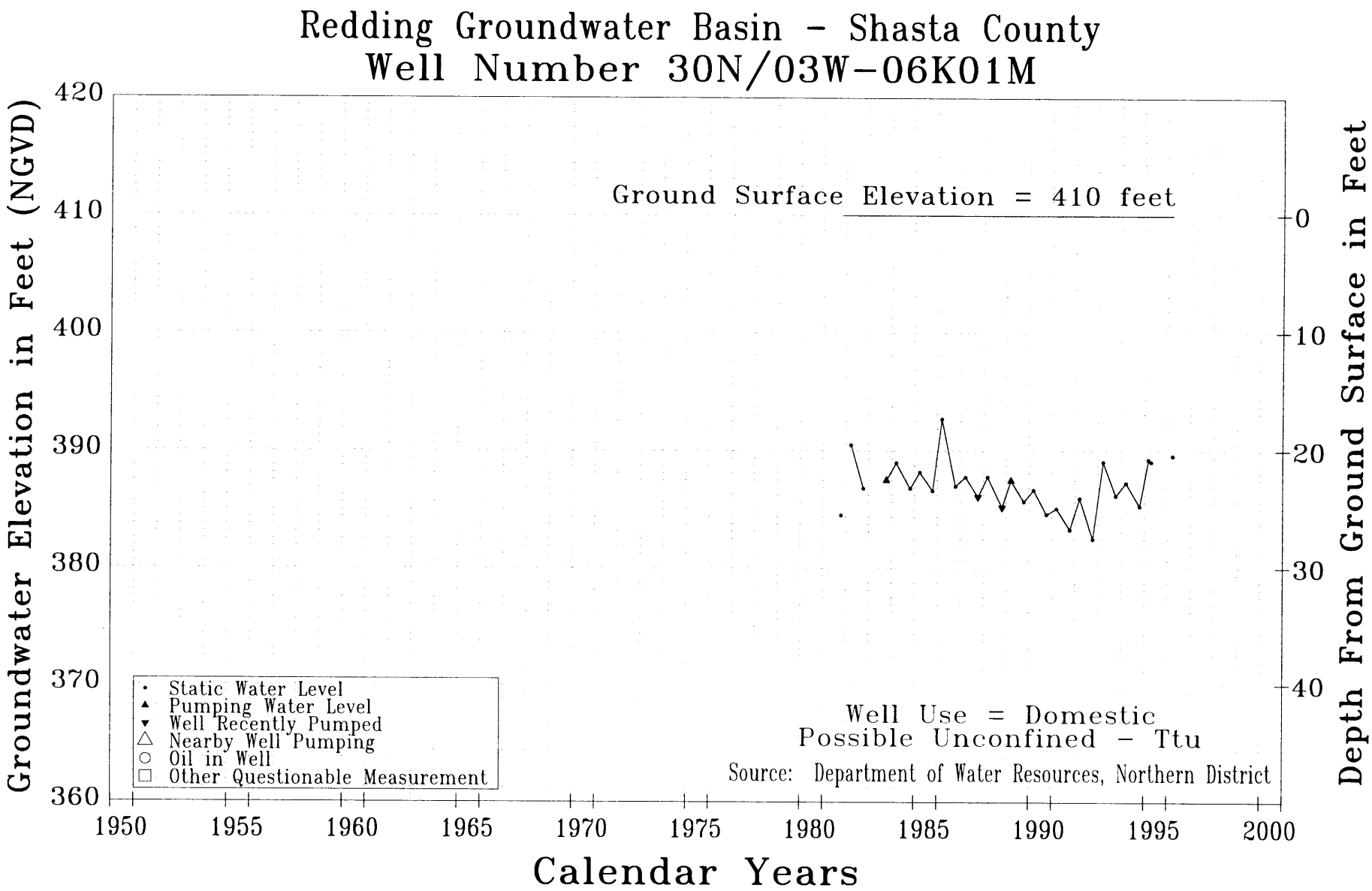

Redding Groundwater Basin - Tehama County
Well Number 29N/05W-16R01M
Ground Surface Elevation = 530 feet
Groundwater Elevation in Feet (NGVD)
500
490
480
470
460
450
440
Depth From Ground Surface in Feet
30
40
50
60
70
80
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Composite - Tte
Source: Department of Water Resources, Northern District

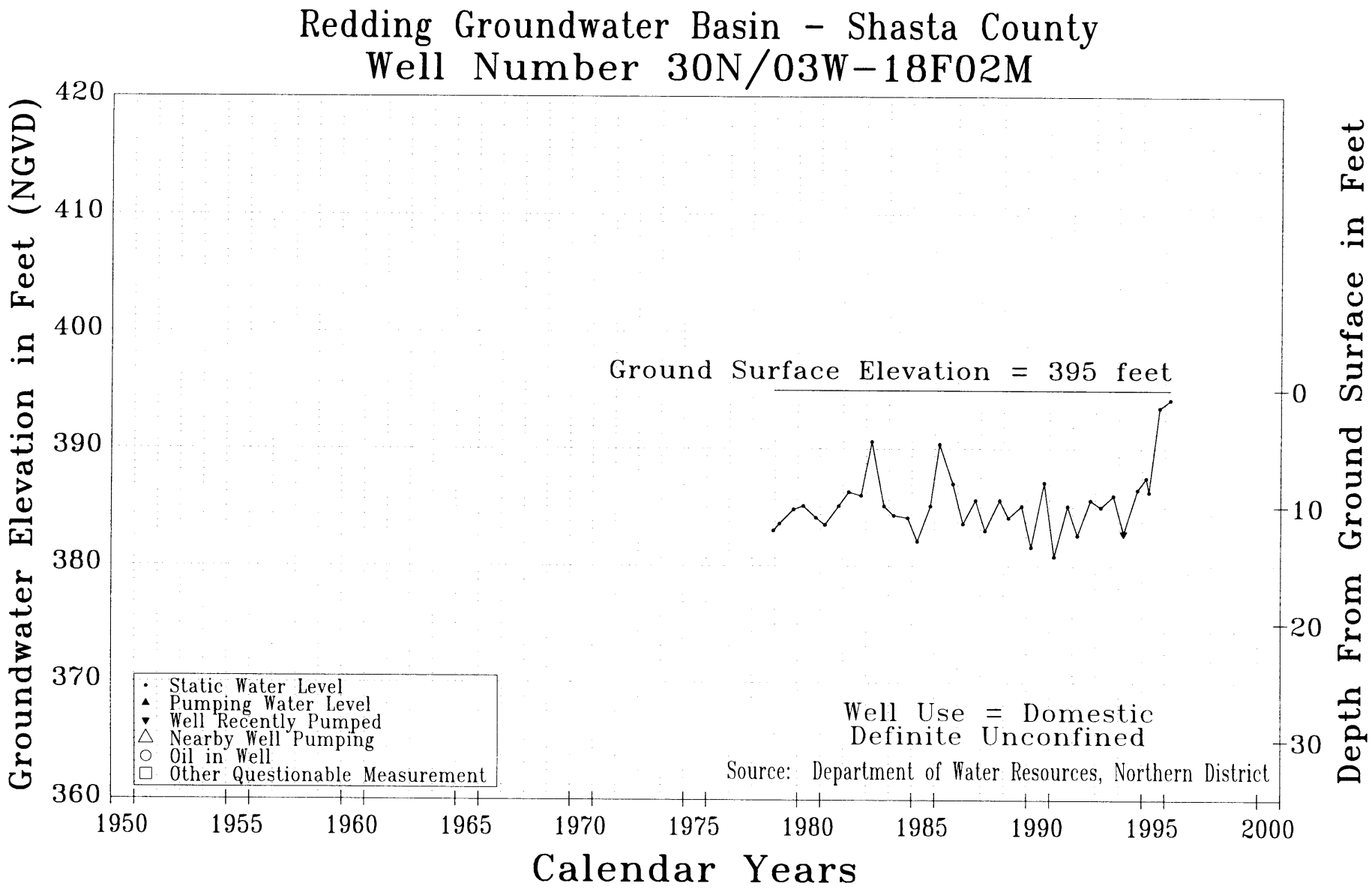

Redding Groundwater Basin - Tehama County
Well Number 29N/05W-26N01M
Ground Surface Elevation = 500 feet
Groundwater Elevation in Feet (NGVD)
Depth From Ground Surface in Feet
Calendar Years
490
480
470
460
450
440
430
10
20
30
40
50
60
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Composite - Tte
Source: Department of Water Resources, Northern District

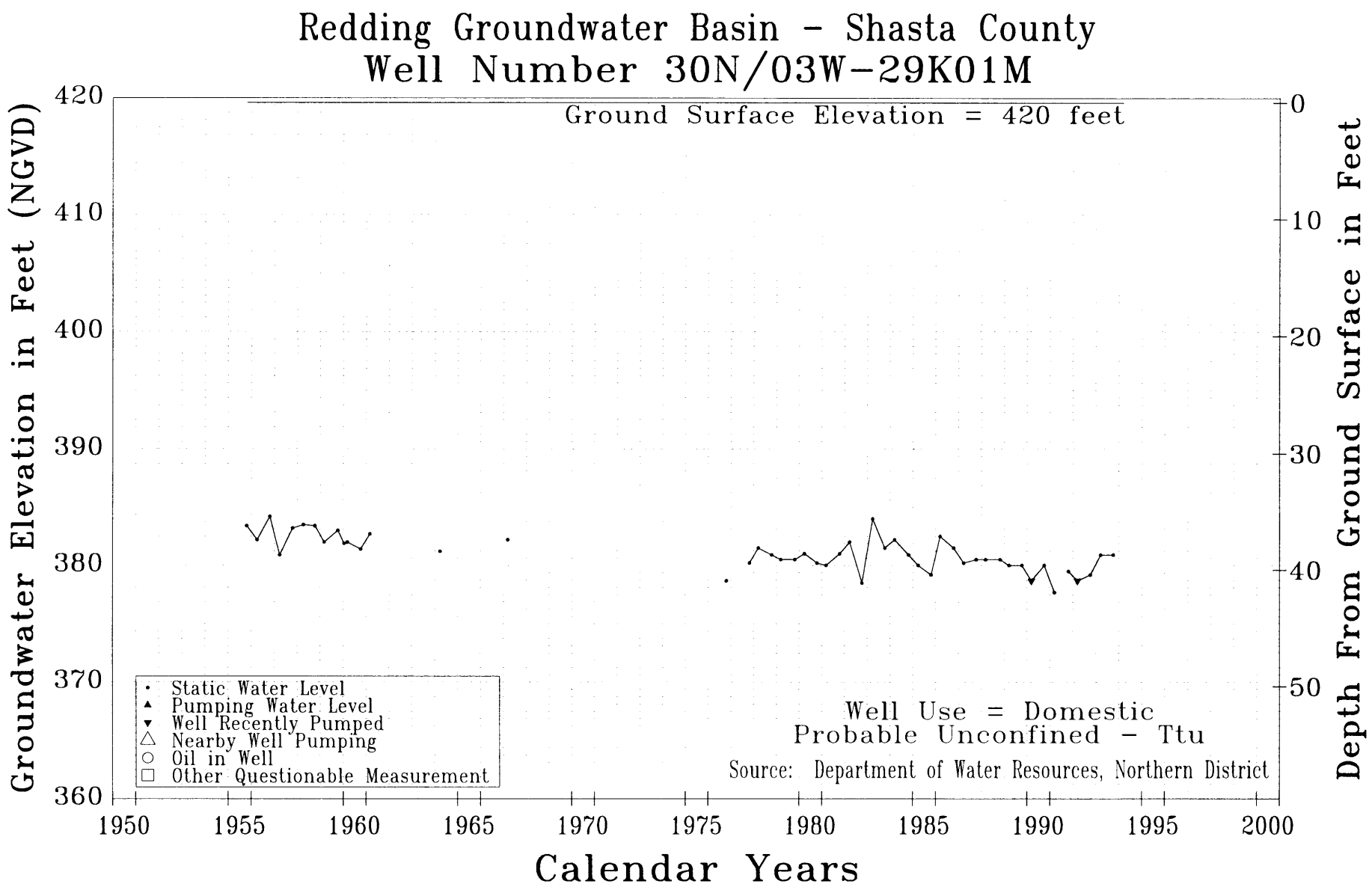

Redding Groundwater Basin - Shasta County
Well Number 30N/03W-04L01M
Ground Surface Elevation = 494 feet
Groundwater Elevation in Feet (NGVD)
450
440
430
420
410
400
390
Depth From Ground Surface in Feet
50
60
70
80
90
100
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District

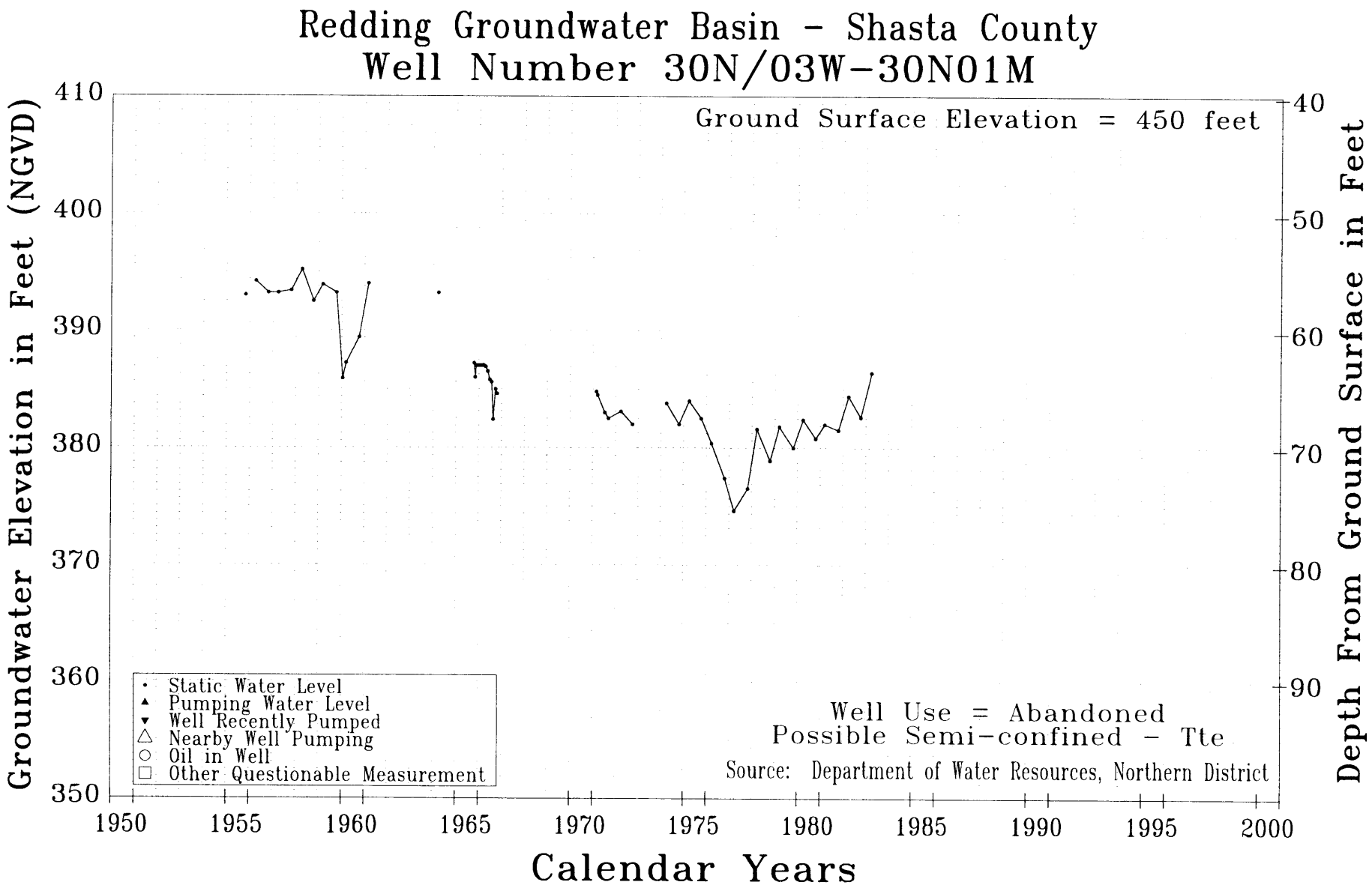

Redding Groundwater Basin - Shasta County
Well Number 30N/03W-04M01M
Ground Surface Elevation = 495 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
70
80
90
100
110
120
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District

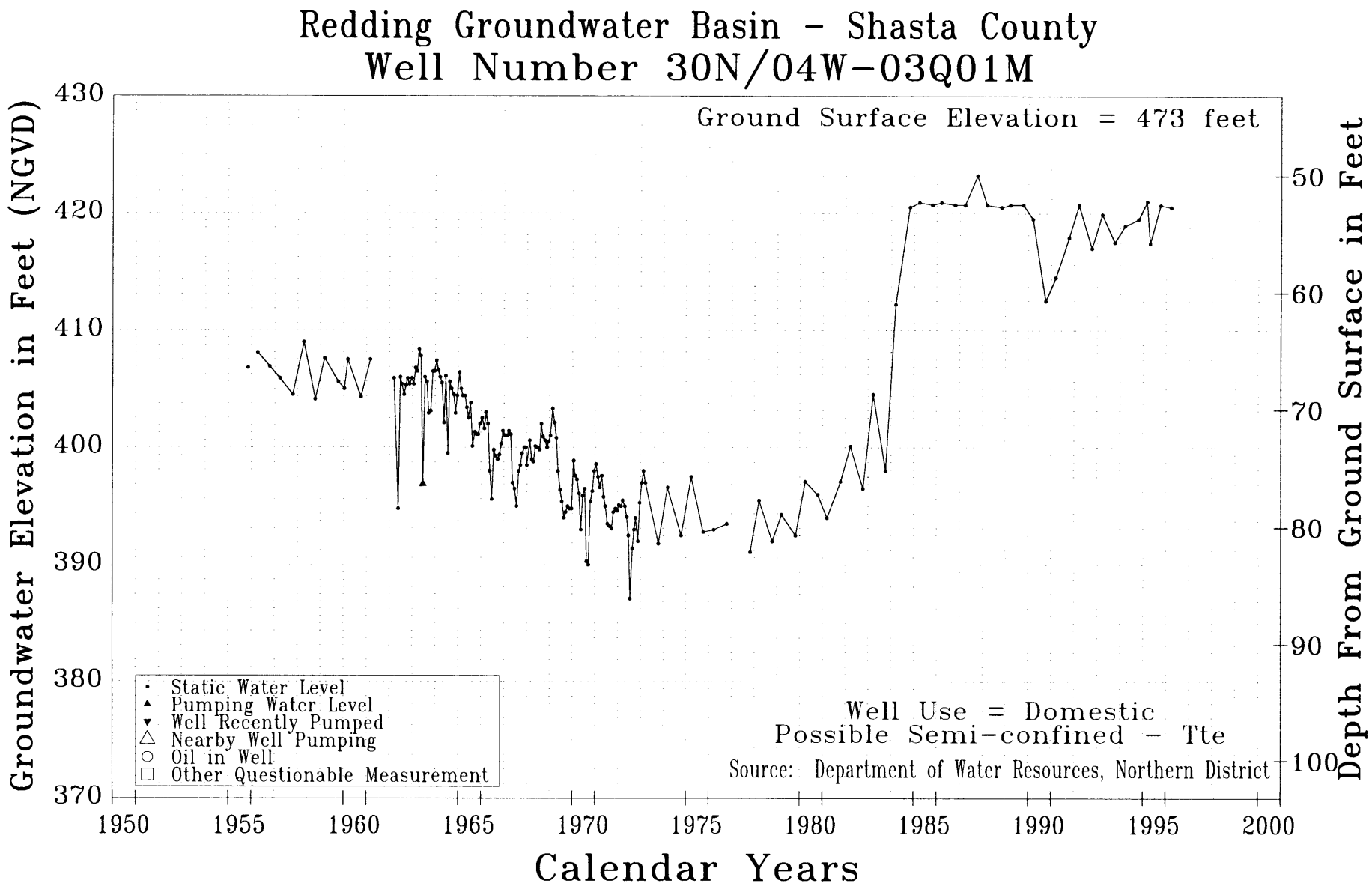

Redding Groundwater Basin - Shasta County
Well Number 30N/03W-06J01M
Ground Surface Elevation = 403 feet
Groundwater Elevation in Feet (NGVD)
420
410
400
390
380
370
360
Depth From Ground Surface in Feet
0
10
20
30
40
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District

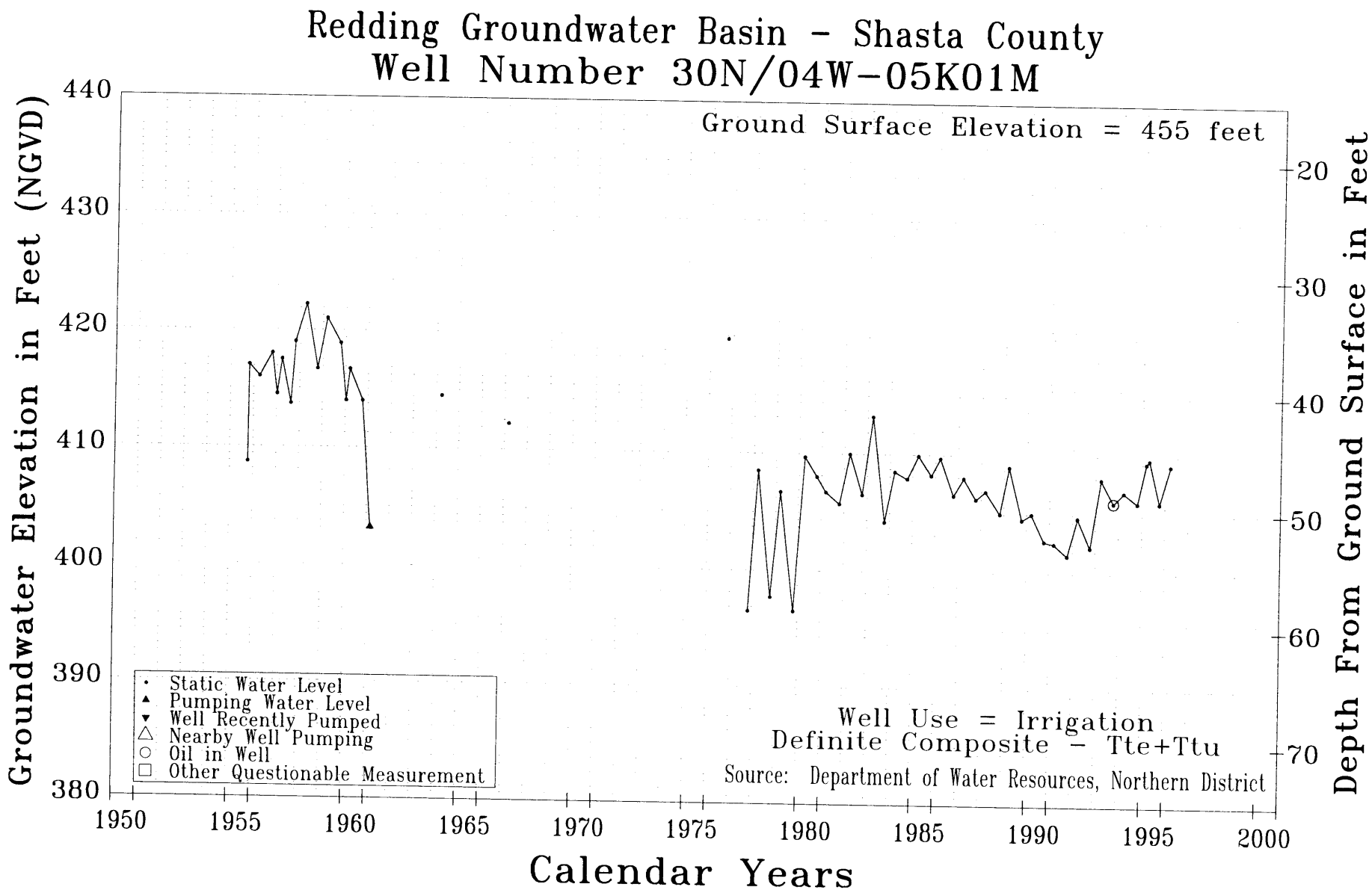

Redding Groundwater Basin - Shasta County
Well Number 30N/03W-06K01M
Ground Surface Elevation = 410 feet
Groundwater Elevation in Feet (NGVD)
420
410
400
390
380
370
360
Depth From Ground Surface in Feet
0
10
20
30
40
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Unconfined - Ttu
Source: Department of Water Resources, Northern District

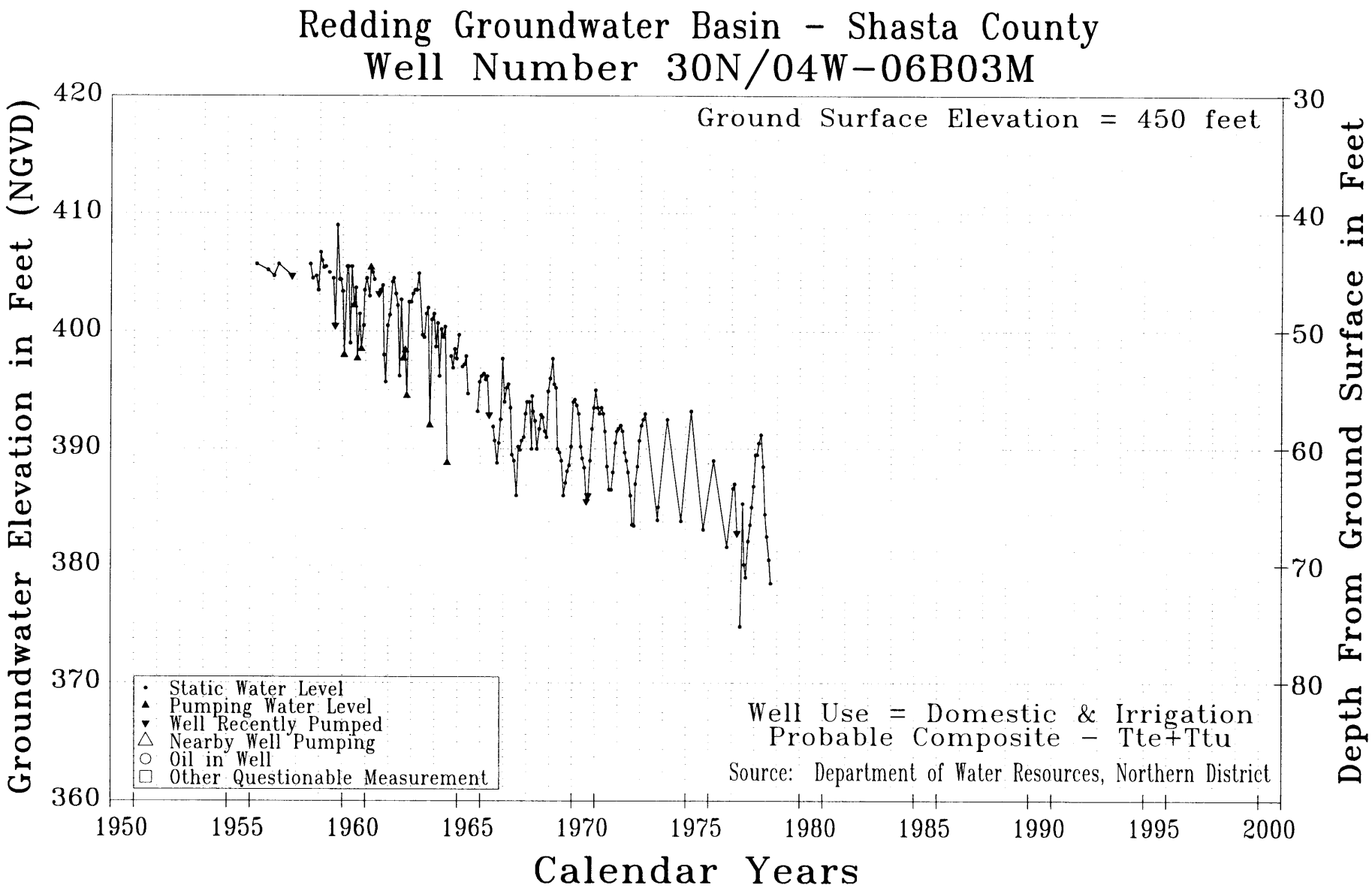

Redding Groundwater Basin - Shasta County
Well Number 30N/03W-18F02M
Groundwater Elevation in Feet (NGVD)
420
410
400
390
380
370
360
Depth From Ground Surface in Feet
0
10
20
30
Ground Surface Elevation = 395 feet
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Definite Unconfined
Source: Department of Water Resources, Northern District
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years

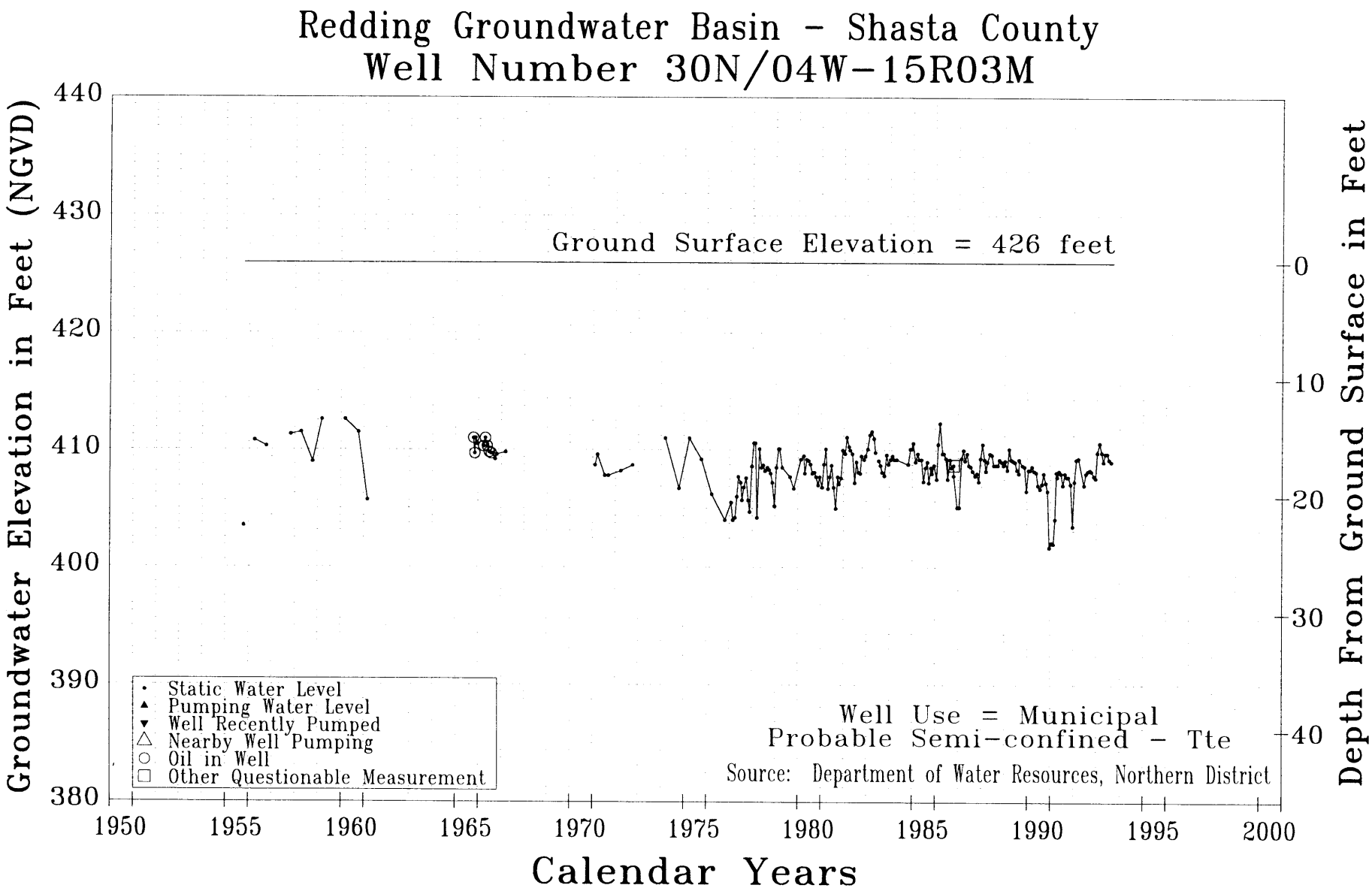

Redding Groundwater Basin - Shasta County
Well Number 30N/03W-29K01M
Ground Surface Elevation = 420 feet
Groundwater Elevation in Feet (NGVD)
Depth From Ground Surface in Feet
Calendar Years
420
410
400
390
380
370
360
0
10
20
30
40
50
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Unconfined - Ttu
Source: Department of Water Resources, Northern District

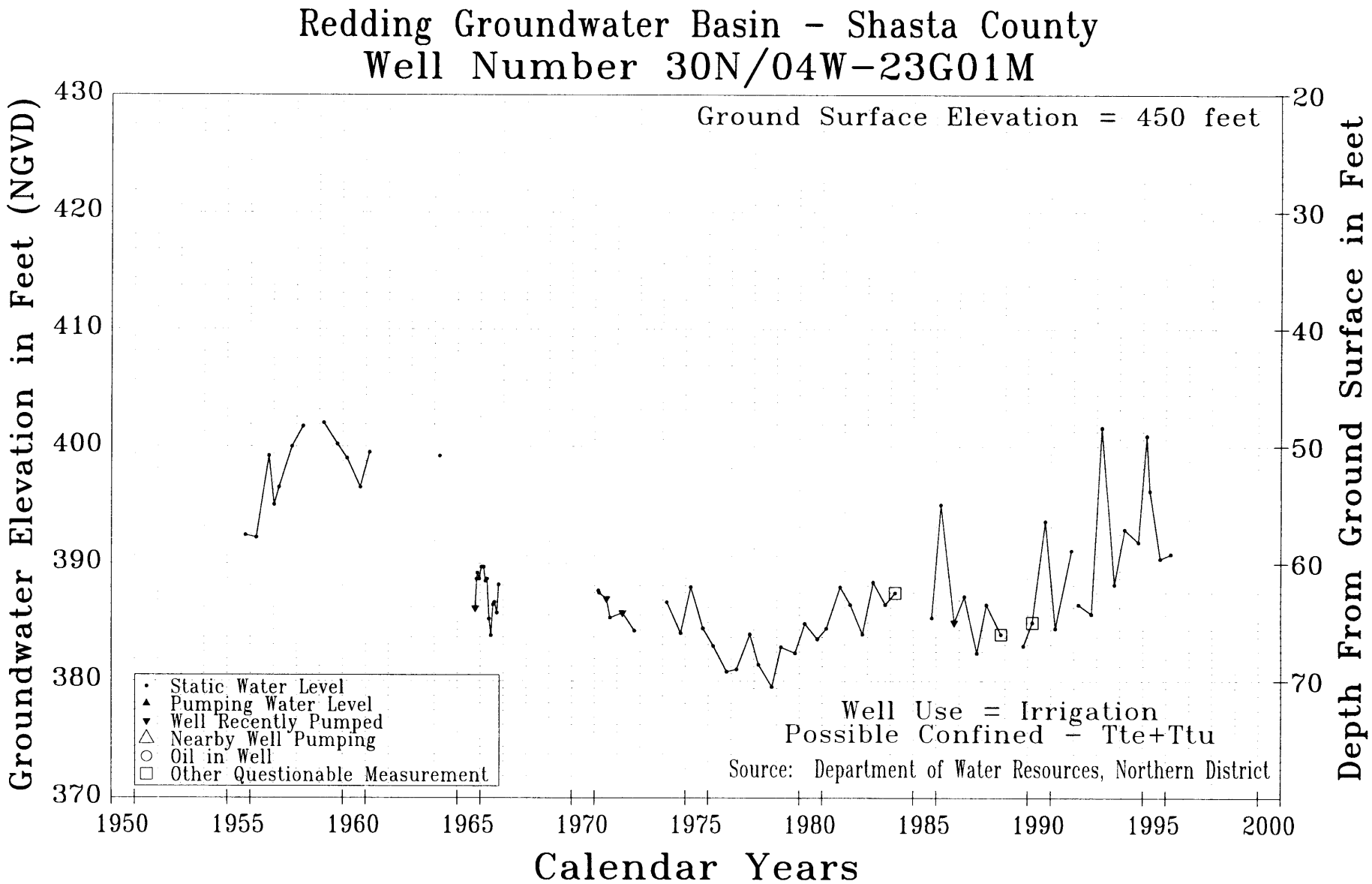

Redding Groundwater Basin - Shasta County
Well Number 30N/03W-30N01M
Ground Surface Elevation = 450 feet
Groundwater Elevation in Feet (NGVD)
410
400
390
380
370
360
350
Depth From Ground Surface in Feet
40
50
60
70
80
90
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Abandoned
Possible Semi-confined - Tte
Source: Department of Water Resources, Northern District

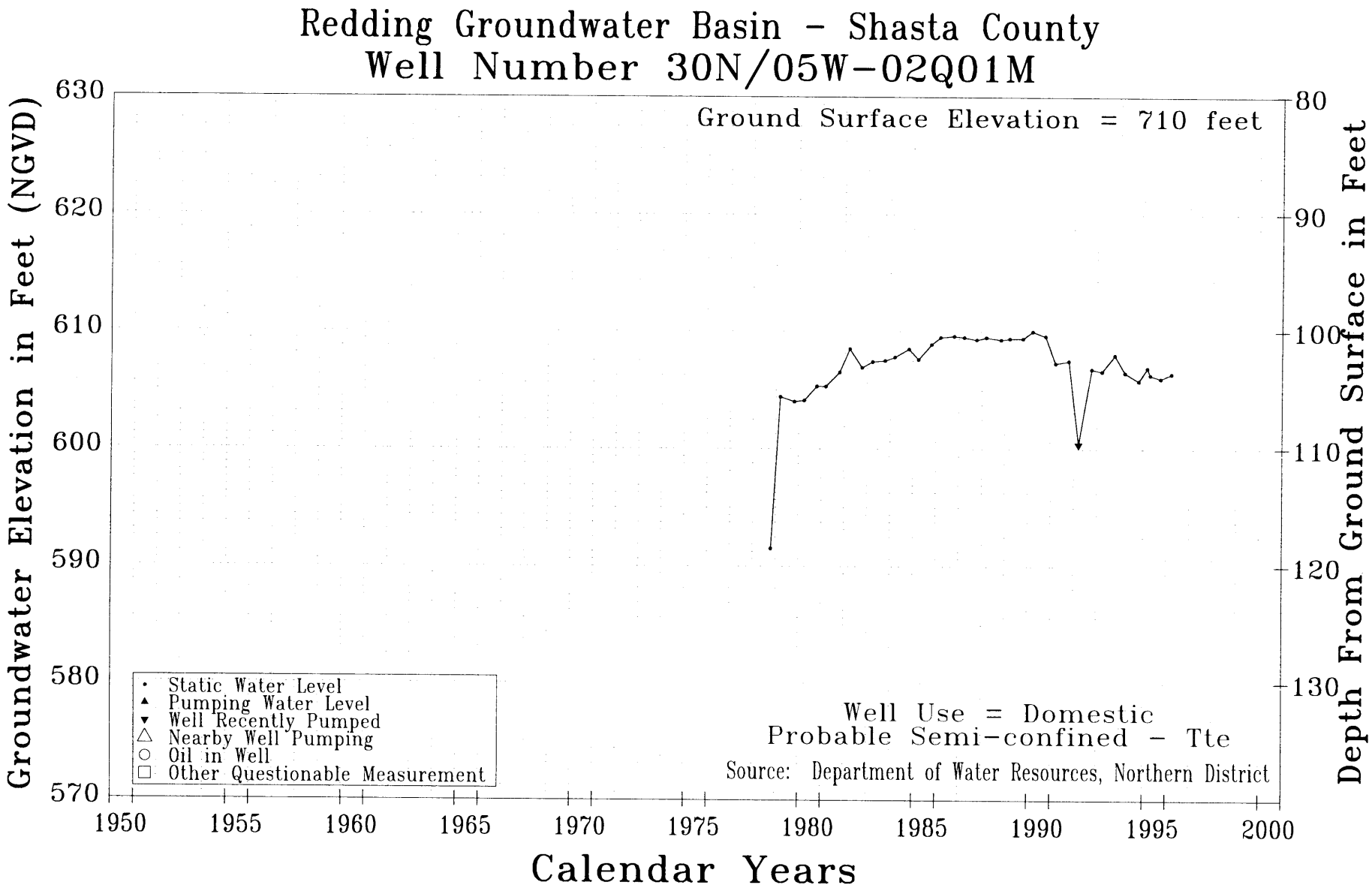

Redding Groundwater Basin - Shasta County
Well Number 30N/04W-03Q01M
Ground Surface Elevation = 473 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
50
60
70
80
90
100
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Semi-confined - Tte
Source: Department of Water Resources, Northern District

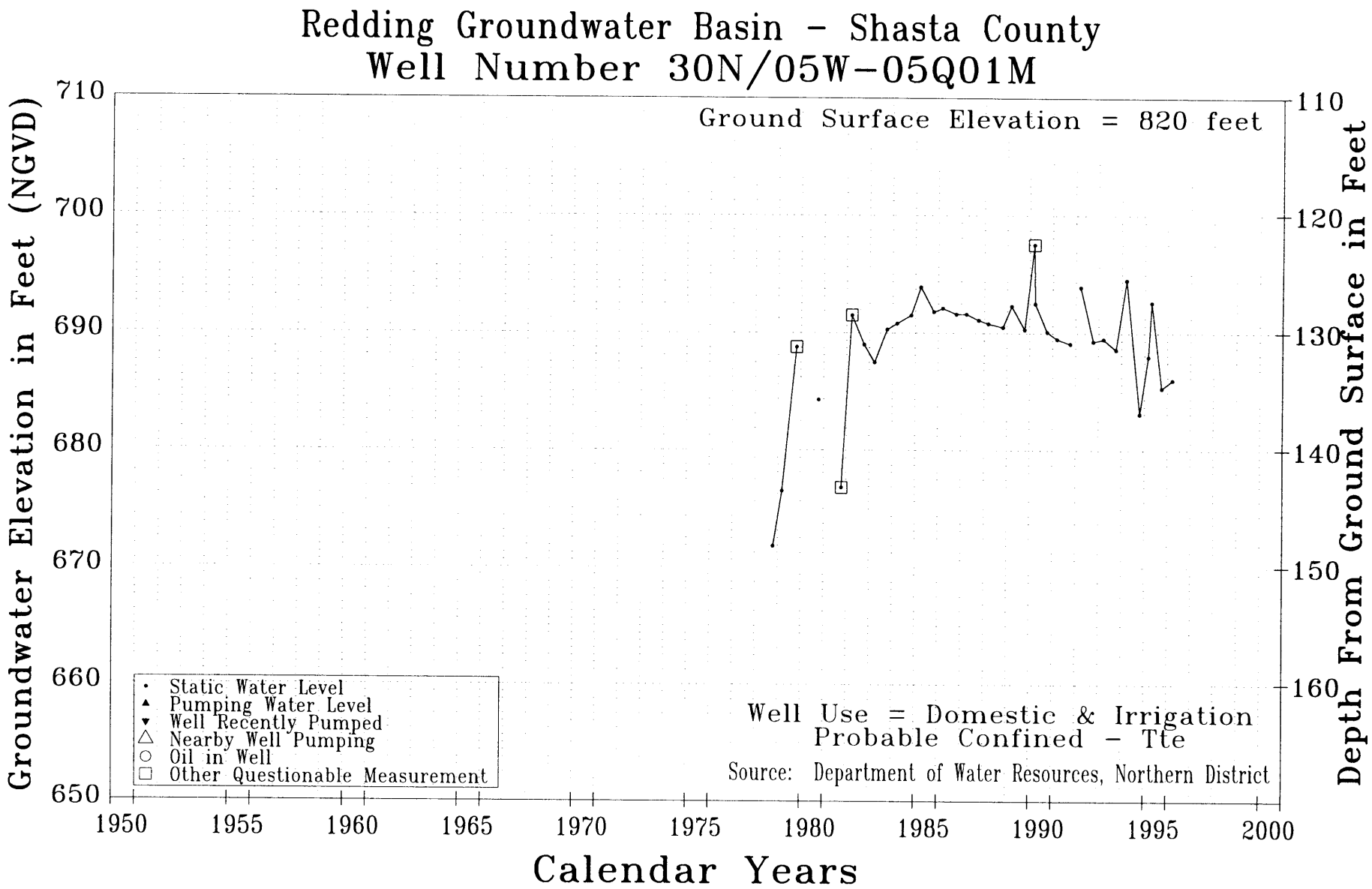

Redding Groundwater Basin - Shasta County
Well Number 30N/04W-05K01M
Ground Surface Elevation = 455 feet
Groundwater Elevation in Feet (NGVD)
440
430
420
410
400
390
380
Depth From Ground Surface in Feet
20
30
40
50
60
70
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Definite Composite - Tte+Ttu
Source: Department of Water Resources, Northern District

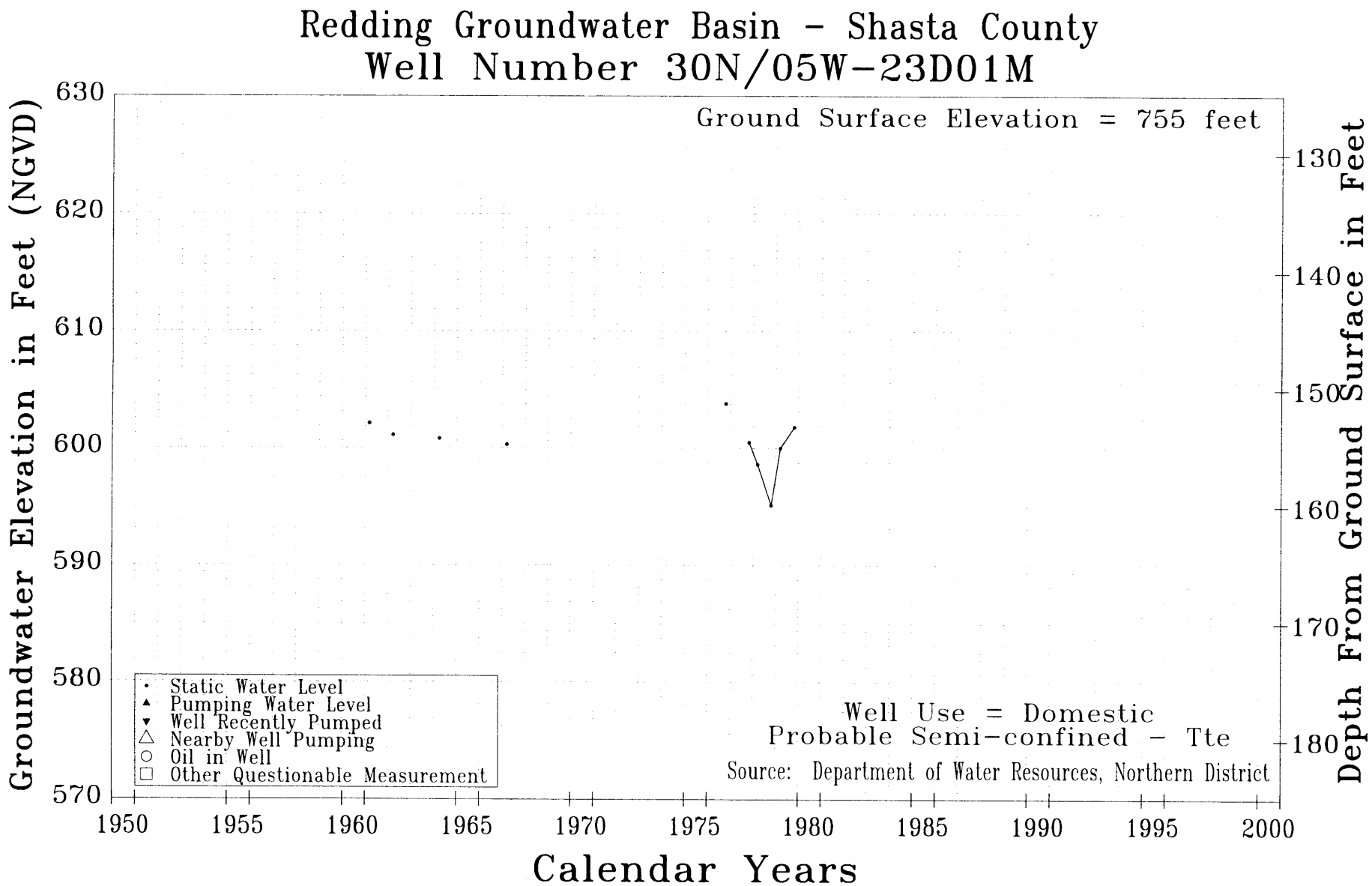

Redding Groundwater Basin - Shasta County
Well Number 30N/04W-06B03M
Ground Surface Elevation = 450 feet
Groundwater Elevation in Feet (NGVD)
420
410
400
390
380
370
360
Depth From Ground Surface in Feet
30
40
50
60
70
80
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic & Irrigation
Probable Composite - Tte+Ttu
Source: Department of Water Resources, Northern District

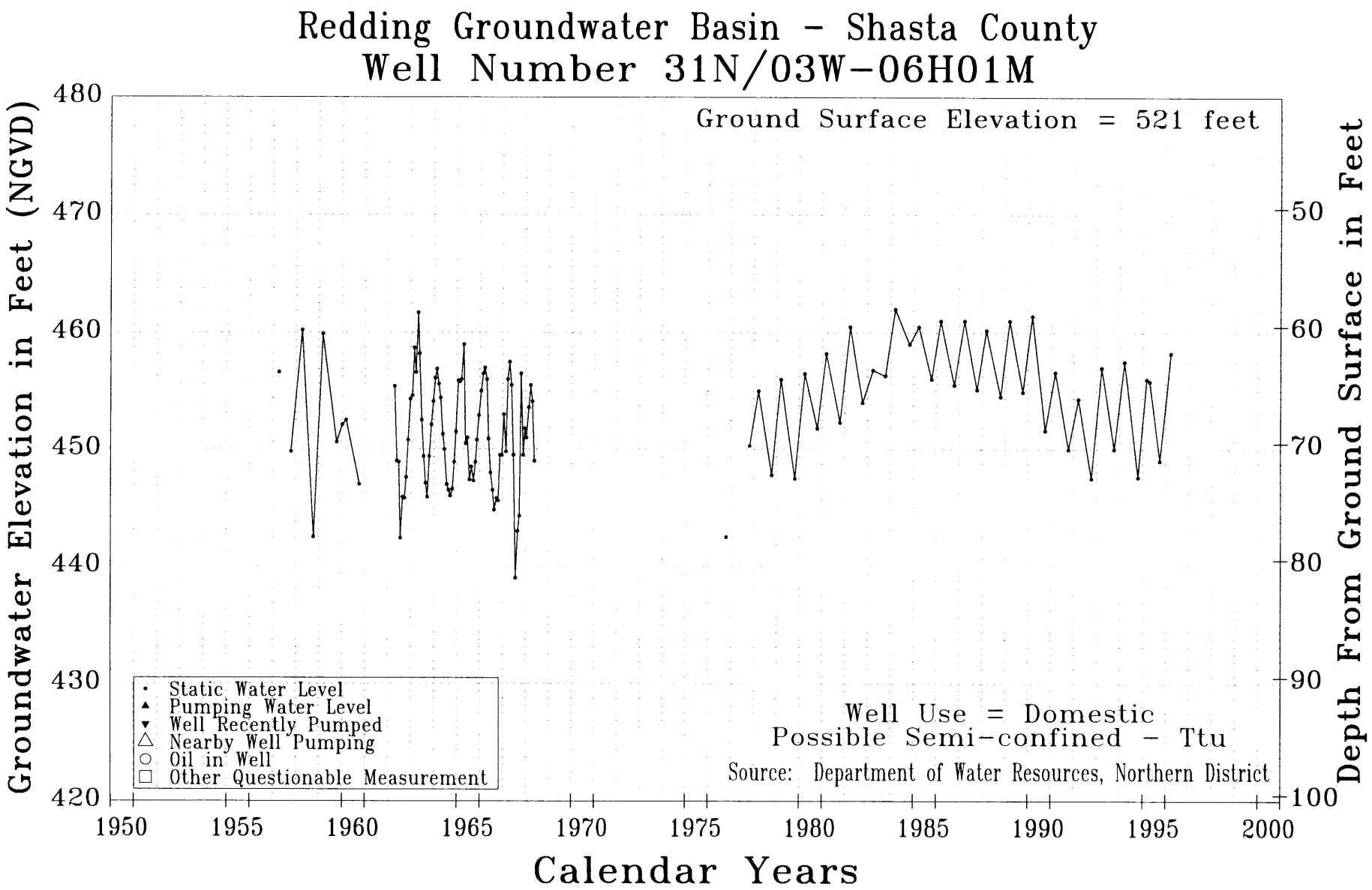

Redding Groundwater Basin - Shasta County
Well Number 30N/04W-15R03M
Ground Surface Elevation = 426 feet
Groundwater Elevation in Feet (NGVD)
440
430
420
410
400
390
380
Depth From Ground Surface in Feet
0
10
20
30
40
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Municipal
Probable Semi-confined - Tte
Source: Department of Water Resources, Northern District

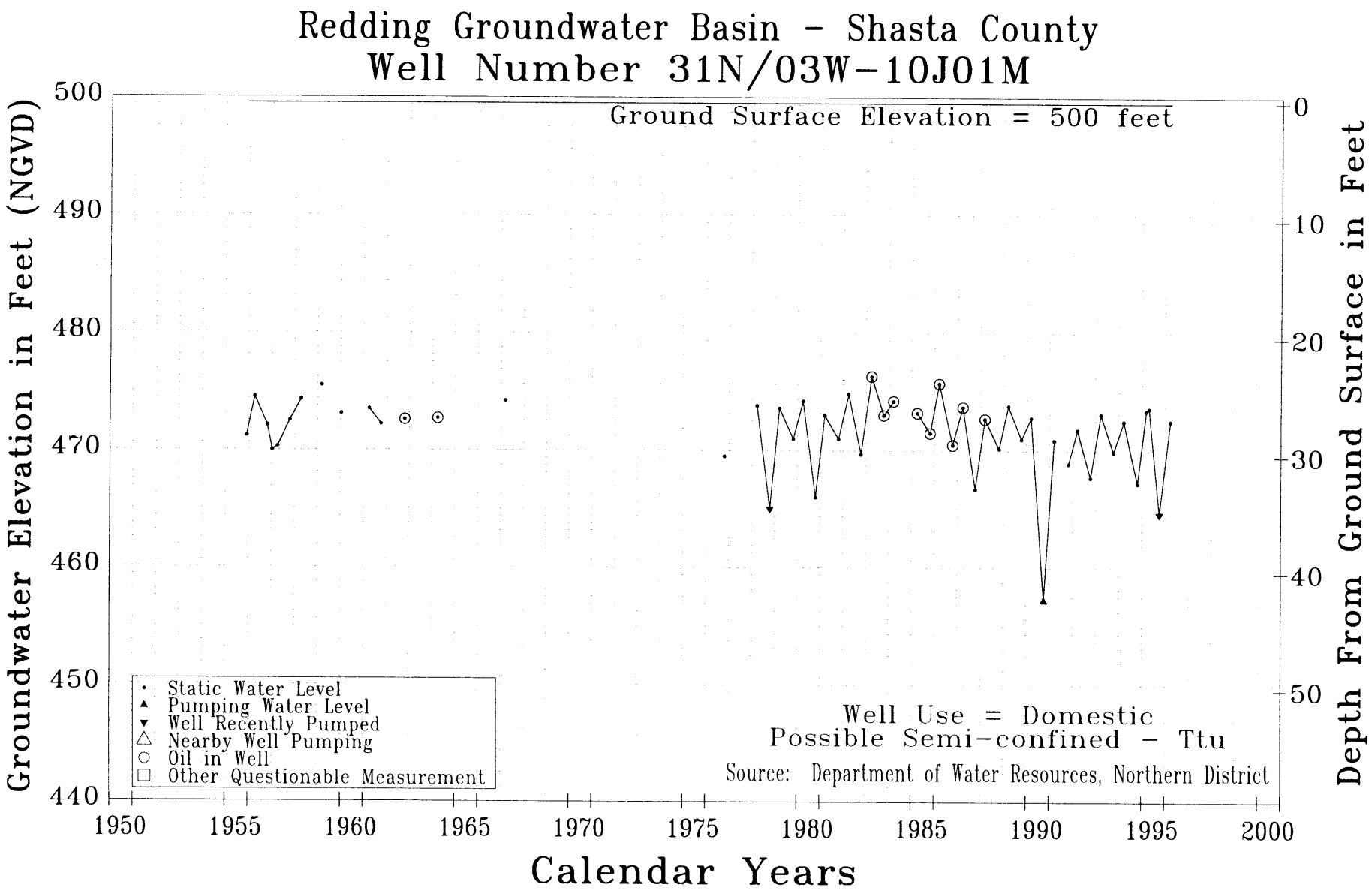

Redding Groundwater Basin - Shasta County
Well Number 30N/04W-23G01M
Ground Surface Elevation = 450 feet
Groundwater Elevation in Feet (NGVD)
Depth From Ground Surface in Feet
Calendar Years
430
420
410
400
390
380
370
20
30
40
50
60
70
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Possible Confined - Tte+Ttu
Source: Department of Water Resources, Northern District

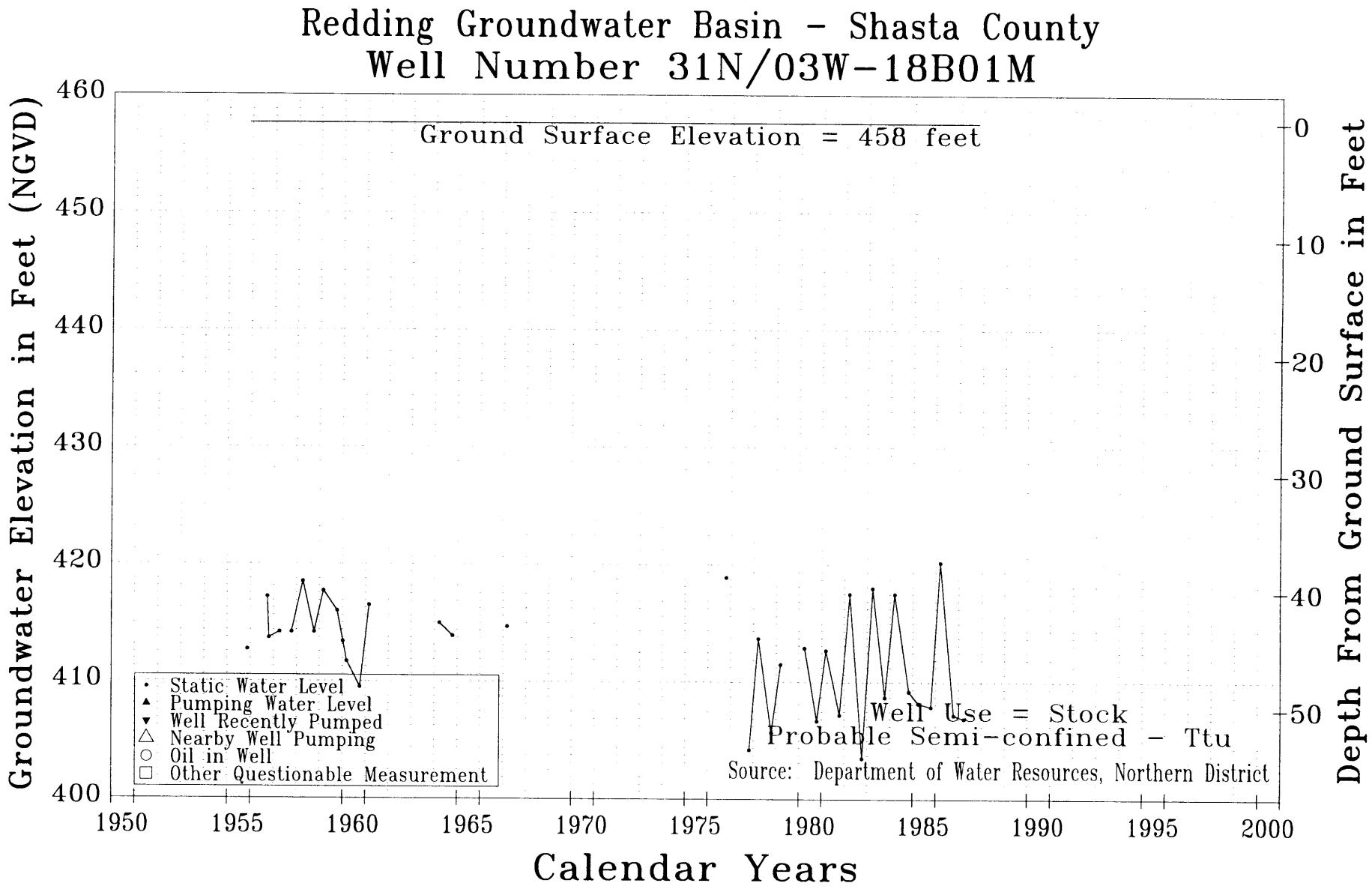

Redding Groundwater Basin - Shasta County
Well Number 30N/05W-02Q01M
Ground Surface Elevation = 710 feet
Groundwater Elevation in Feet (NGVD)
630
620
610
600
590
580
570
Depth From Ground Surface in Feet
80
90
100
110
120
130
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Semi-confined - Tte
Source: Department of Water Resources, Northern District

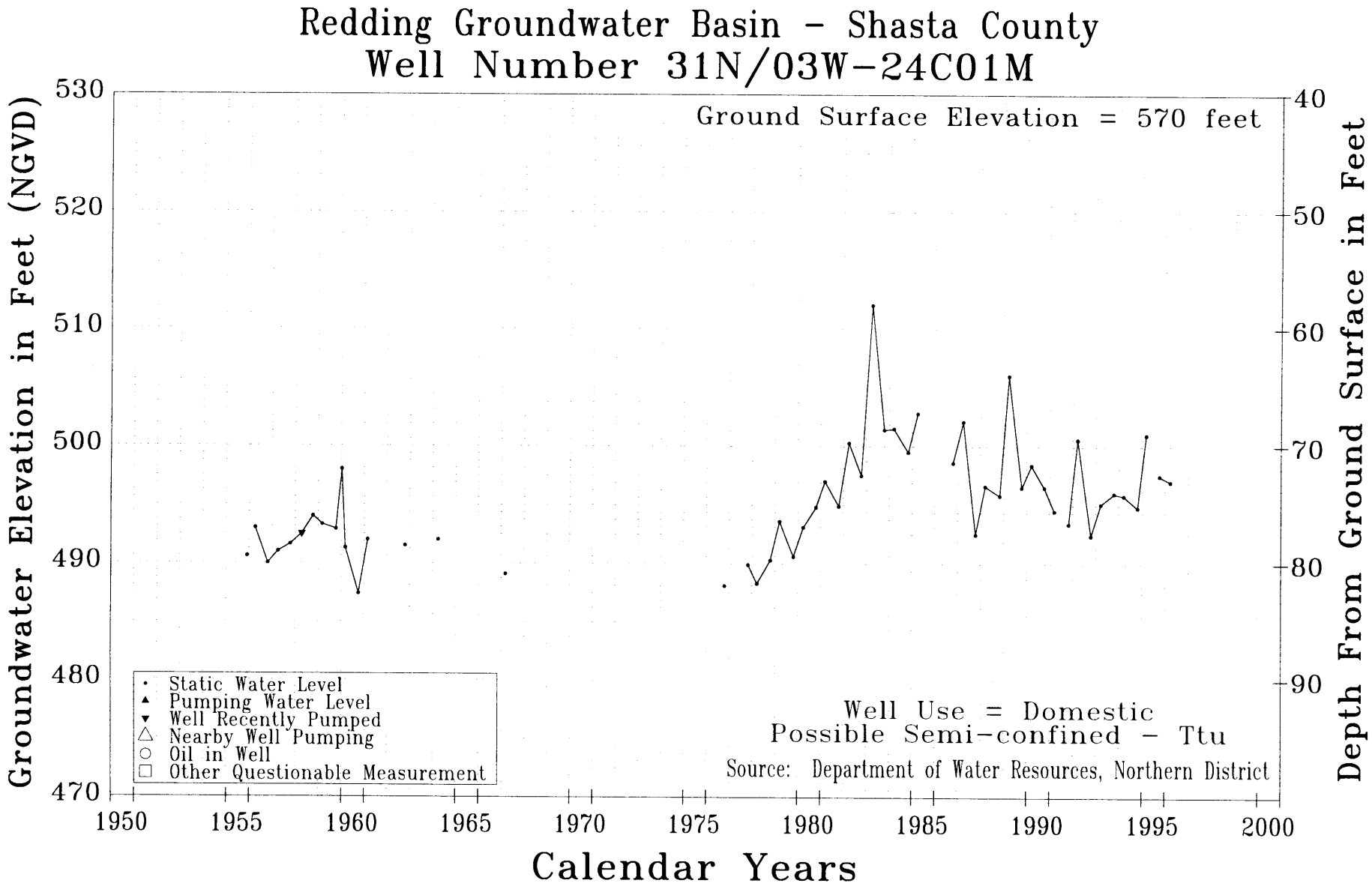

Redding Groundwater Basin - Shasta County
Well Number 30N/05W-05Q01M
Ground Surface Elevation = 820 feet
Groundwater Elevation in Feet (NGVD)
710
700
690
680
670
660
650
Depth From Ground Surface in Feet
110
120
130
140
150
160
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic & Irrigation
Probable Confined - Tte
Source: Department of Water Resources, Northern District

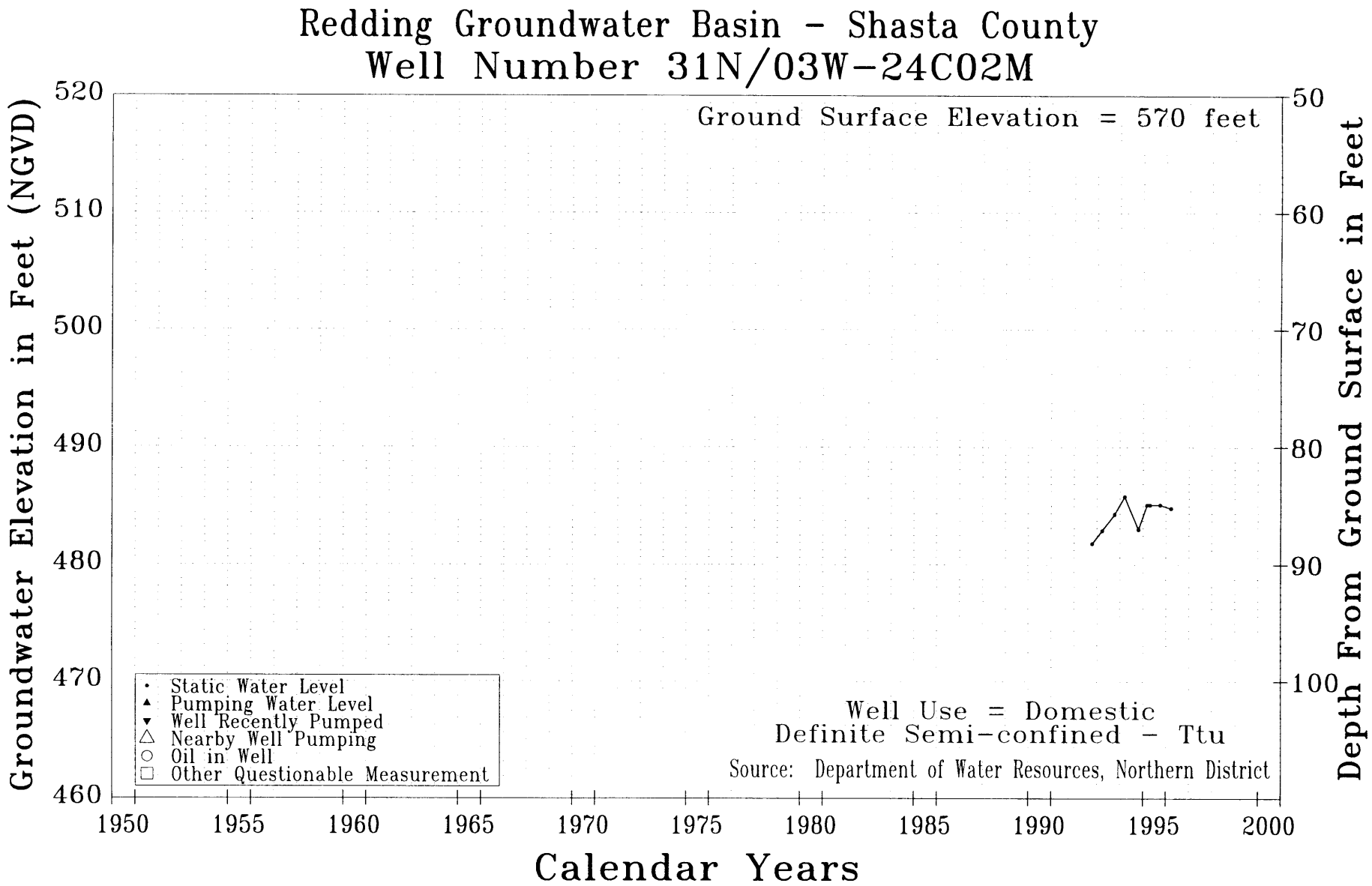

Redding Groundwater Basin - Shasta County
Well Number 30N/05W-23D01M
Ground Surface Elevation = 755 feet
Groundwater Elevation in Feet (NGVD)
630
620
610
600
590
580
570
Depth From Ground Surface in Feet
130
140
150
160
170
180
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Semi-confined - Tte
Source: Department of Water Resources, Northern District

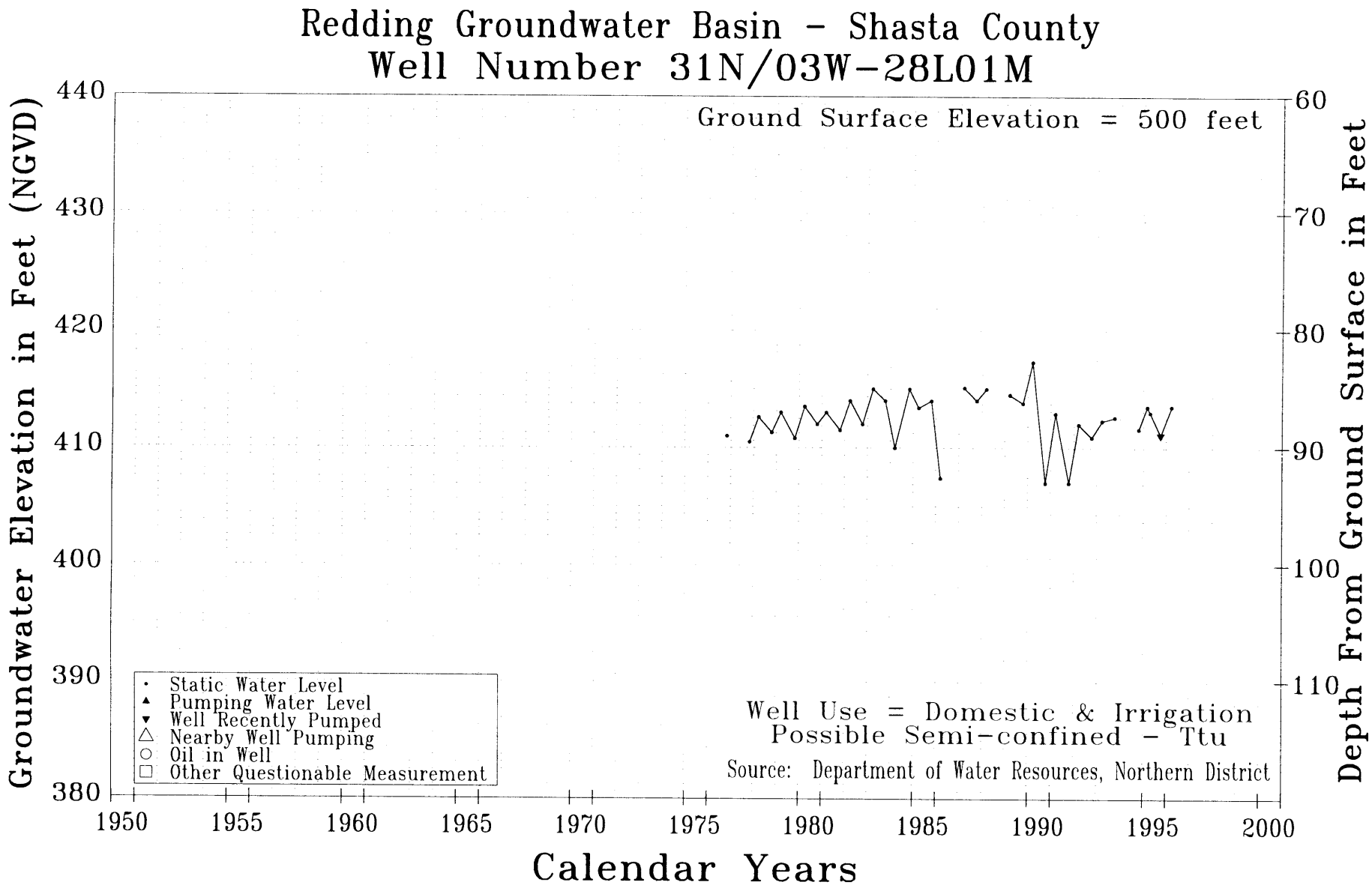

Redding Groundwater Basin - Shasta County
Well Number 31N/03W-06H01M
Ground Surface Elevation = 521 feet
Groundwater Elevation in Feet (NGVD)
480
470
460
450
440
430
420
Depth From Ground Surface in Feet
50
60
70
80
90
100
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Semi-confined - Ttu
Source: Department of Water Resources, Northern District

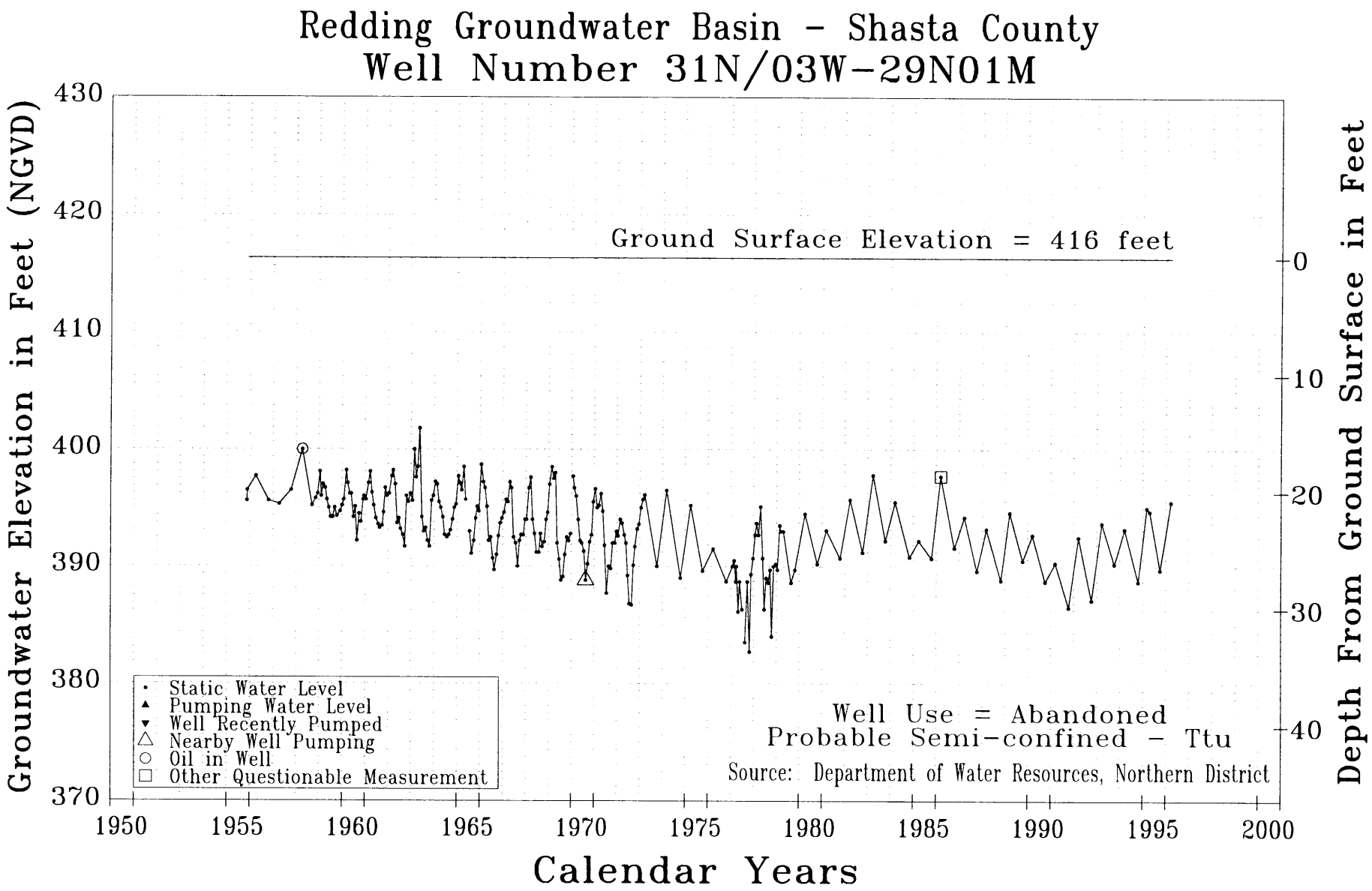

Redding Groundwater Basin - Shasta County
Well Number 31N/03W-10J01M
Ground Surface Elevation = 500 feet
Groundwater Elevation in Feet (NGVD)
Depth From Ground Surface in Feet
Calendar Years
500
490
480
470
460
450
440
0
10
20
30
40
50
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Semi-confined - Ttu
Source: Department of Water Resources, Northern District

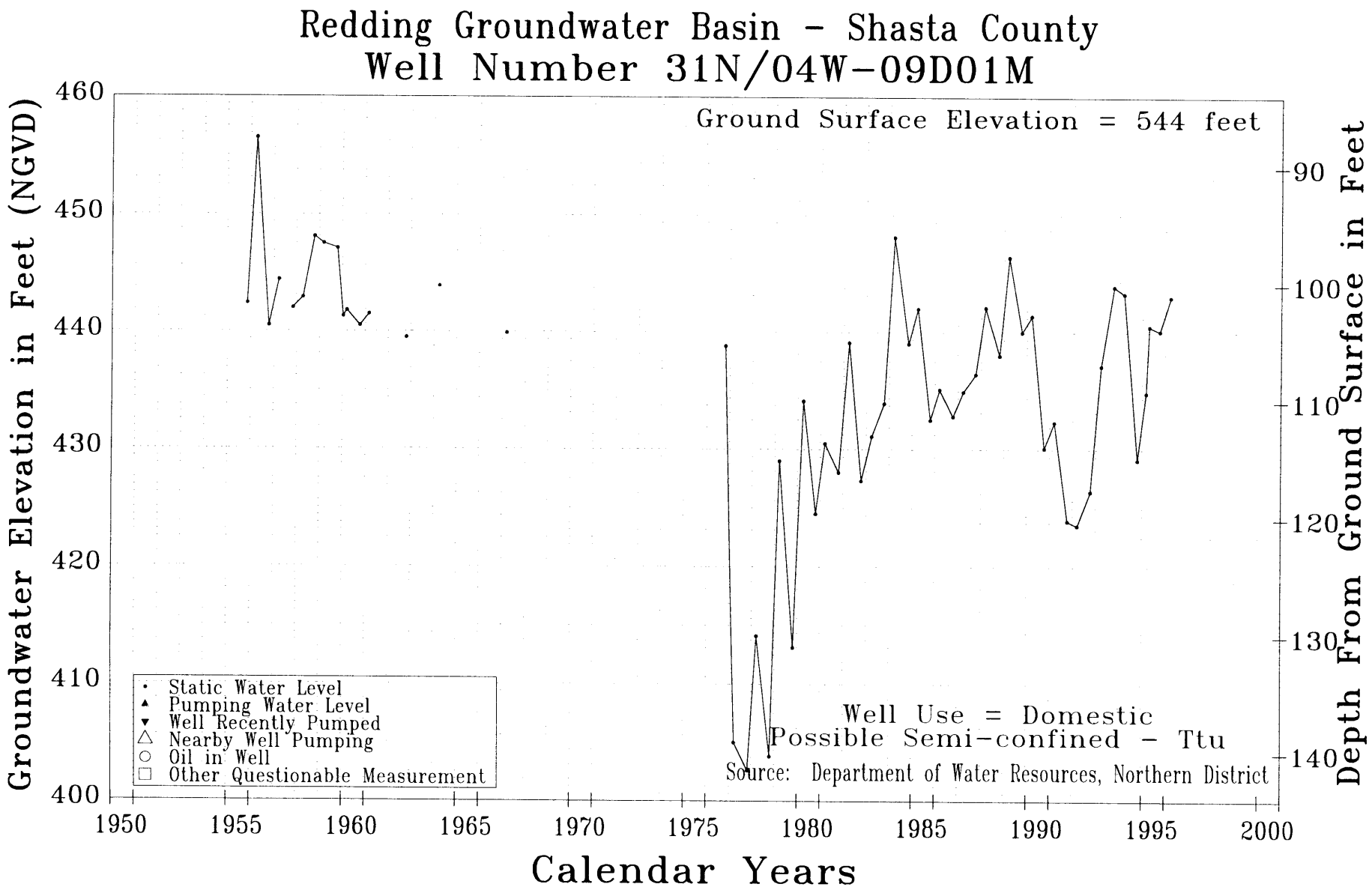

Redding Groundwater Basin - Shasta County
Well Number 31N/03W-18B01M
Ground Surface Elevation = 458 feet
Groundwater Elevation in Feet (NGVD)
460
450
440
430
420
410
400
Depth From Ground Surface in Feet
0
10
20
30
40
50
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Stock
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District

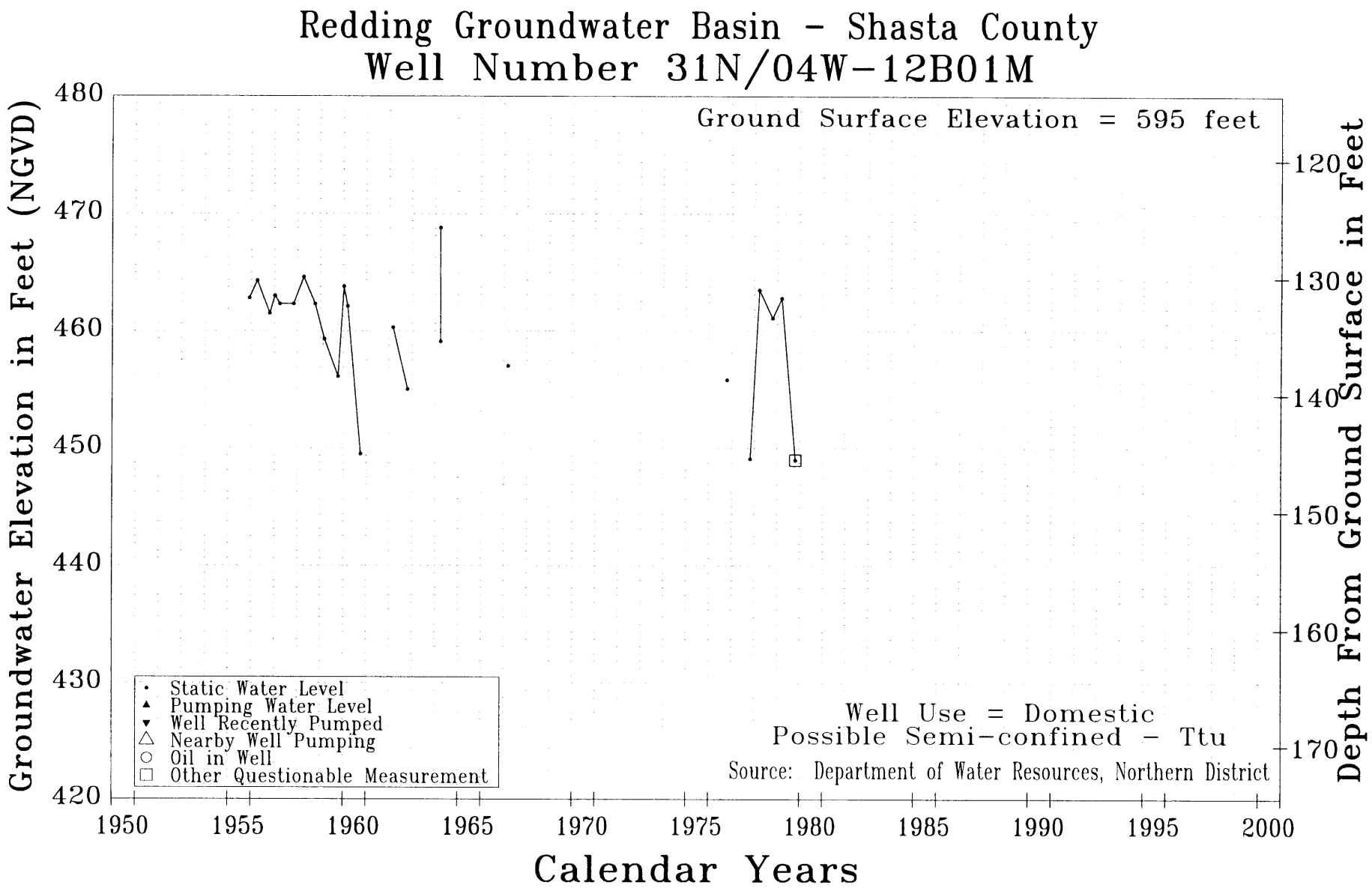

Redding Groundwater Basin - Shasta County
Well Number 31N/03W-24C01M
Ground Surface Elevation = 570 feet
Groundwater Elevation in Feet (NGVD)
530
520
510
500
490
480
470
Depth From Ground Surface in Feet
40
50
60
70
80
90
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Semi-confined - Ttu
Source: Department of Water Resources, Northern District

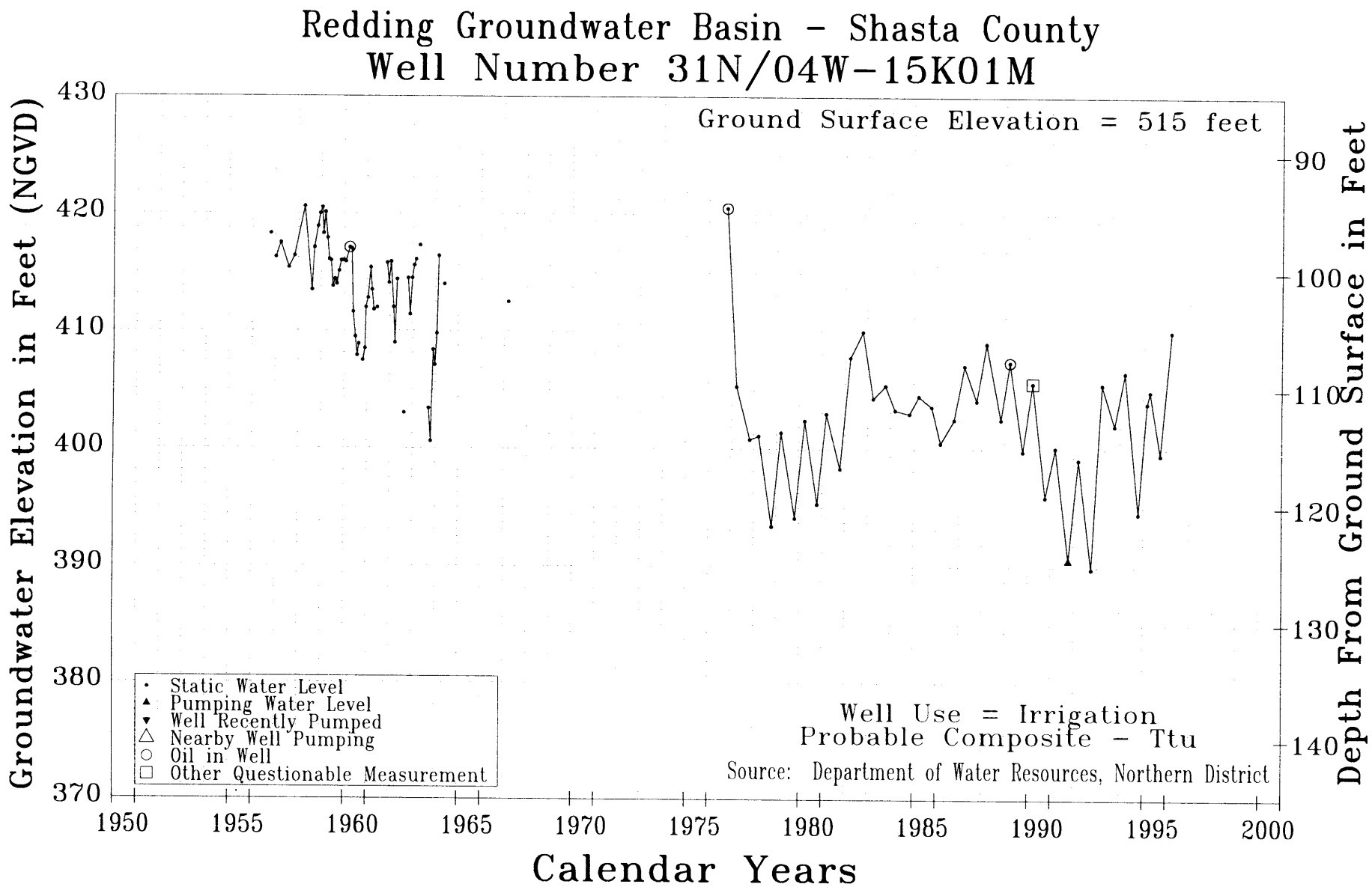

Redding Groundwater Basin - Shasta County
Well Number 31N/03W-24C02M
Ground Surface Elevation = 570 feet
Groundwater Elevation in Feet (NGVD)
520
510
500
490
480
470
460
Depth From Ground Surface in Feet
50
60
70
80
90
100
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Definite Semi-confined - Ttu
Source: Department of Water Resources, Northern District

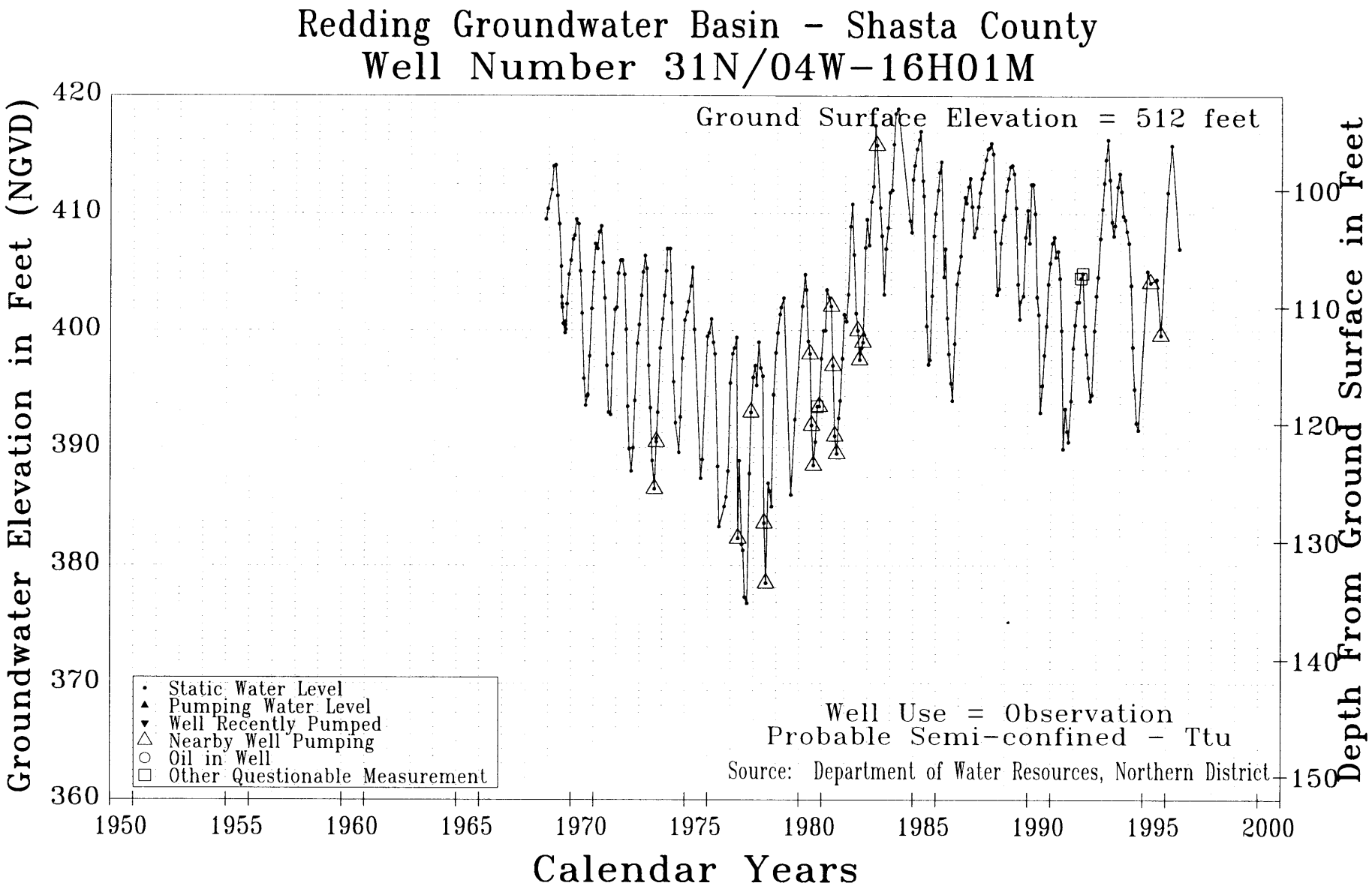

Redding Groundwater Basin - Shasta County
Well Number 31N/03W-28L01M
Ground Surface Elevation = 500 feet
Groundwater Elevation in Feet (NGVD)
440
430
420
410
400
390
380
Depth From Ground Surface in Feet
60
70
80
90
100
110
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic & Irrigation
Possible Semi-confined - Ttu
Source: Department of Water Resources, Northern District

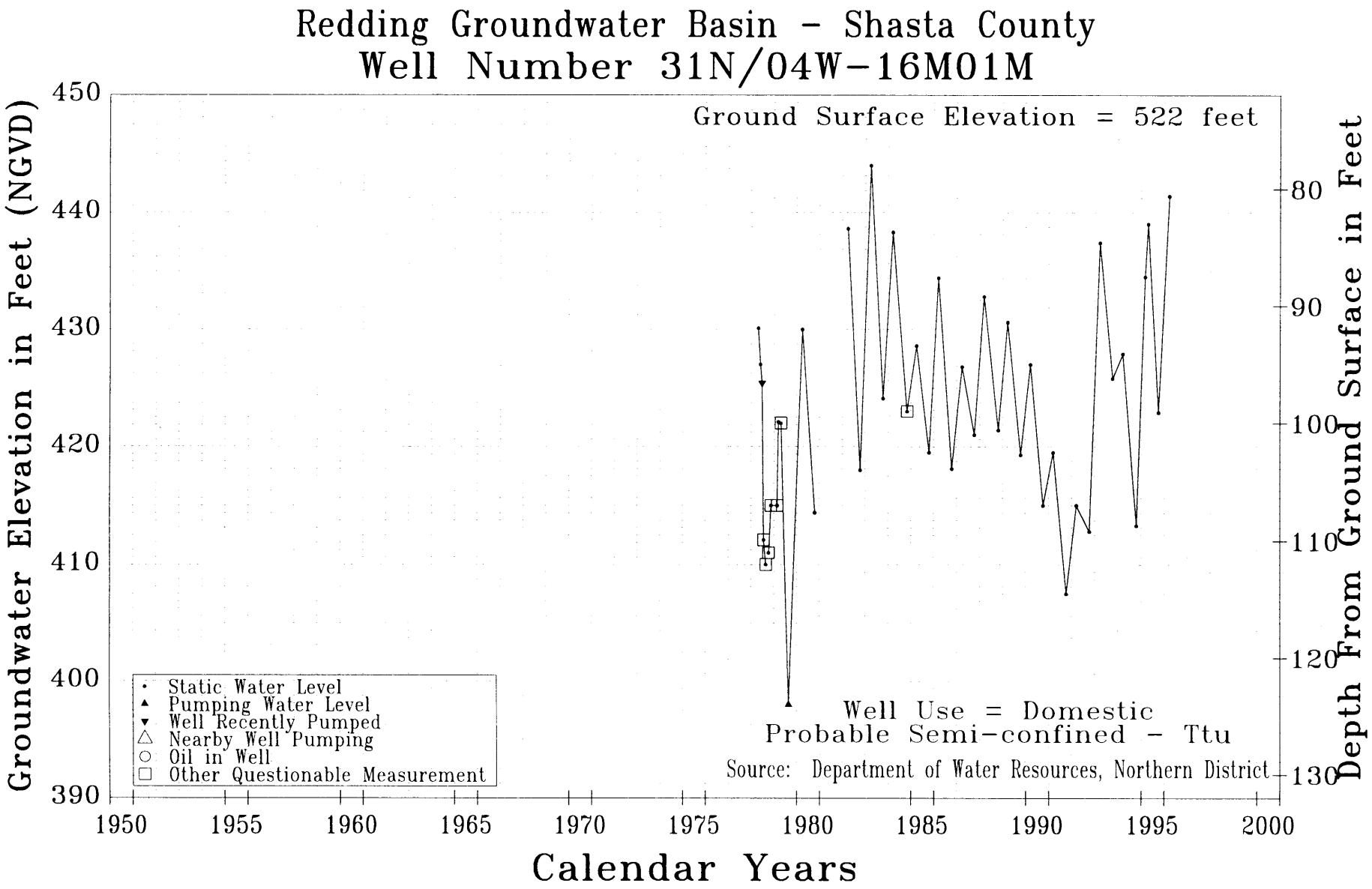

Redding Groundwater Basin - Shasta County
Well Number 31N/03W-29N01M
Ground Surface Elevation = 416 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
0
10
20
30
40
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Abandoned
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District

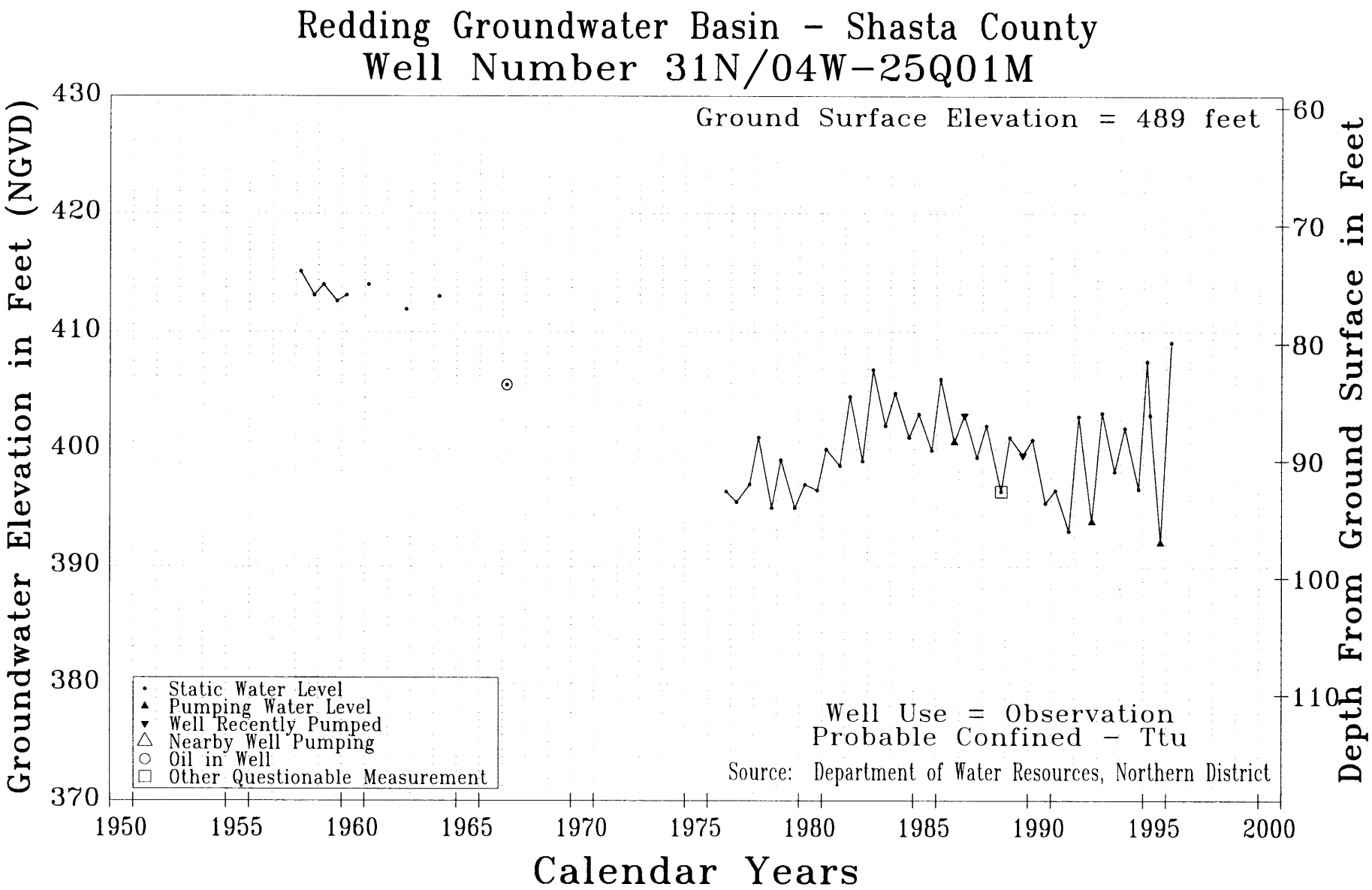

Redding Groundwater Basin - Shasta County
Well Number 31N/04W-09D01M
Ground Surface Elevation = 544 feet
Groundwater Elevation in Feet (NGVD)
460
450
440
430
420
410
400
Depth From Ground Surface in Feet
90
100
110
120
130
140
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Semi-confined - Ttu
Source: Department of Water Resources, Northern District

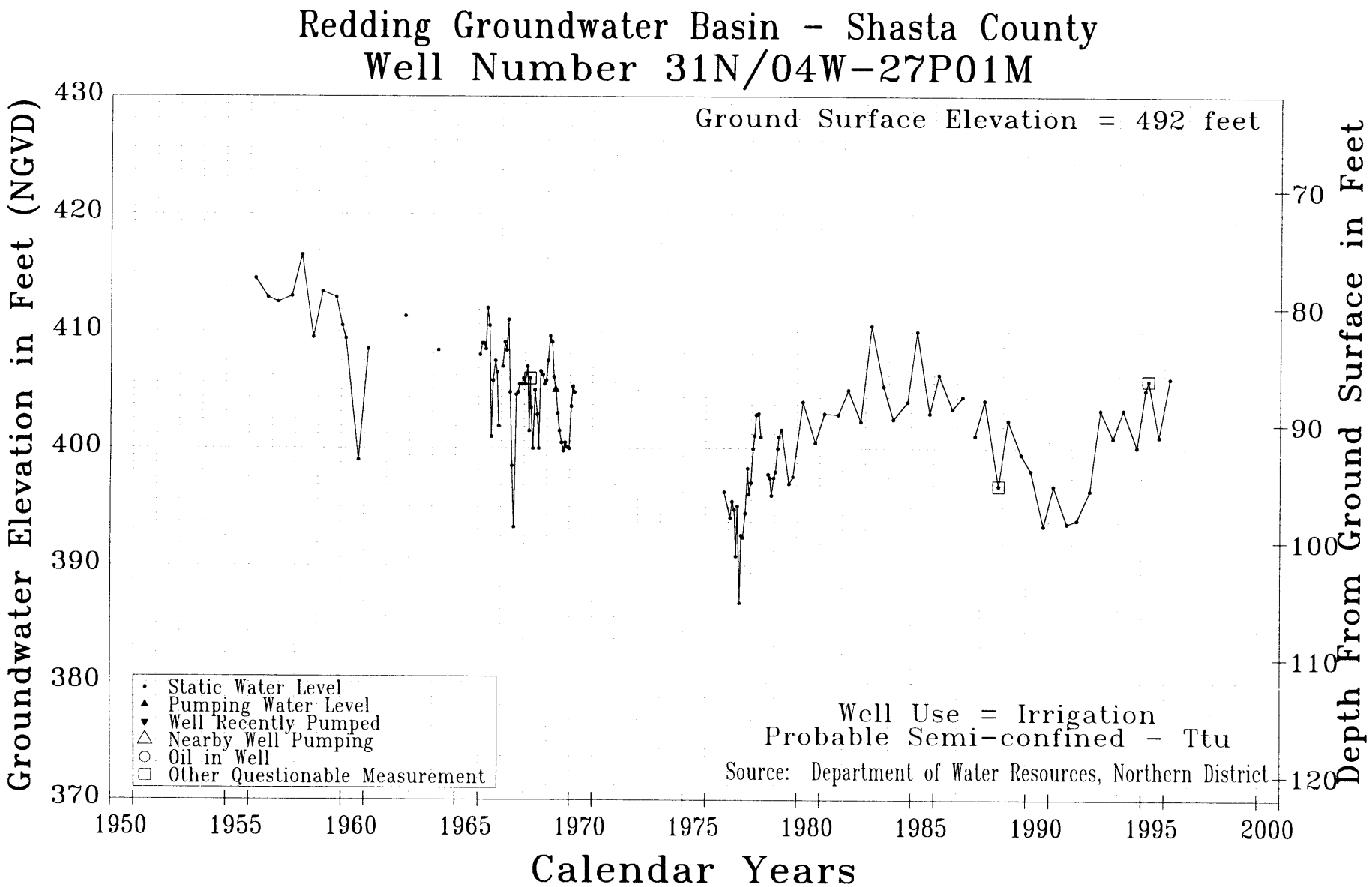

Redding Groundwater Basin - Shasta County
Well Number 31N/04W-12B01M
Ground Surface Elevation = 595 feet
Groundwater Elevation in Feet (NGVD)
480
470
460
450
440
430
420
Depth From Ground Surface in Feet
120
130
140
150
160
170
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Semi-confined - Ttu
Source: Department of Water Resources, Northern District

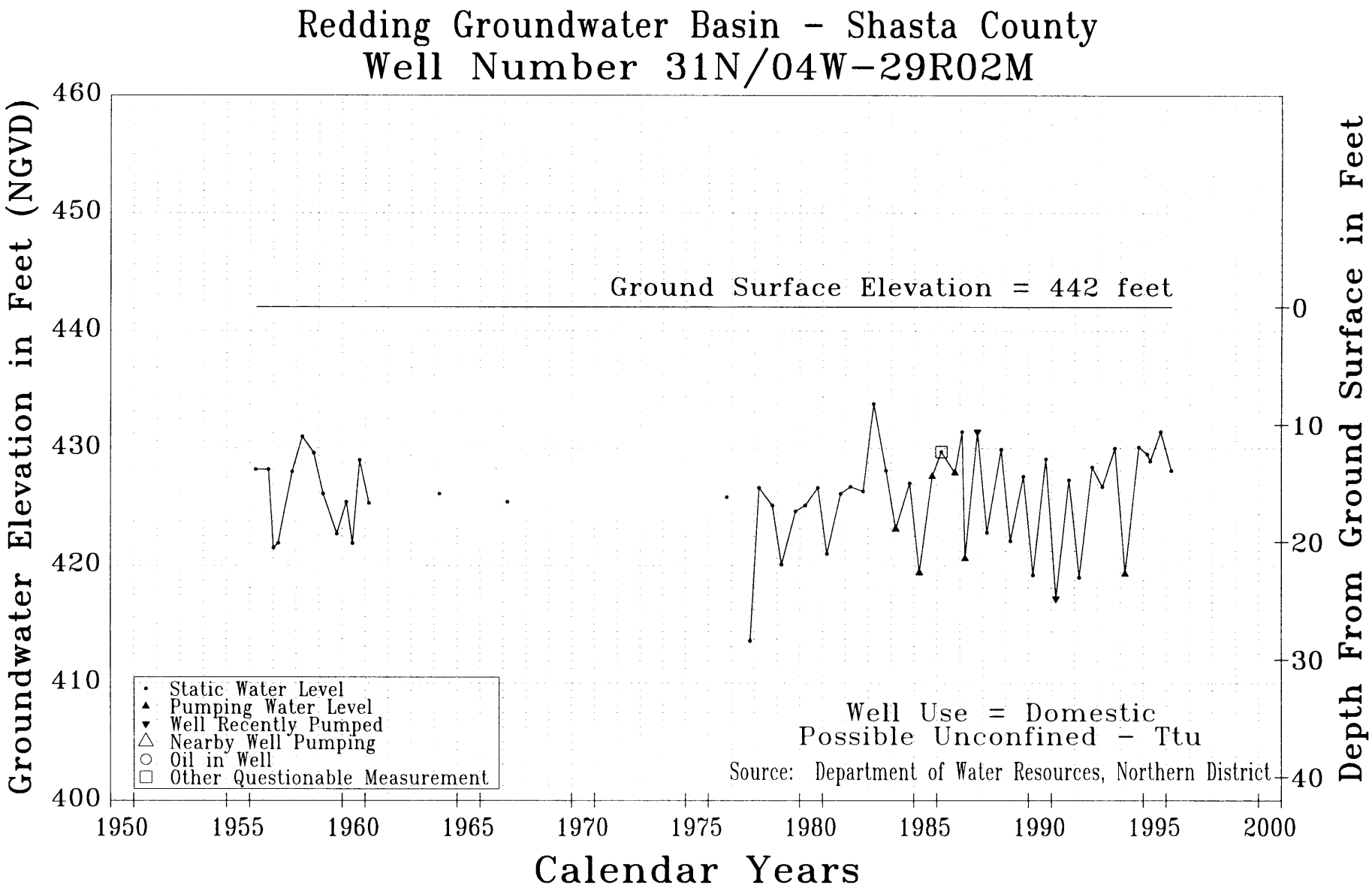

Redding Groundwater Basin - Shasta County
Well Number 31N/04W-15K01M
Ground Surface Elevation = 515 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
90
100
110
120
130
140
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Composite - Ttu
Source: Department of Water Resources, Northern District

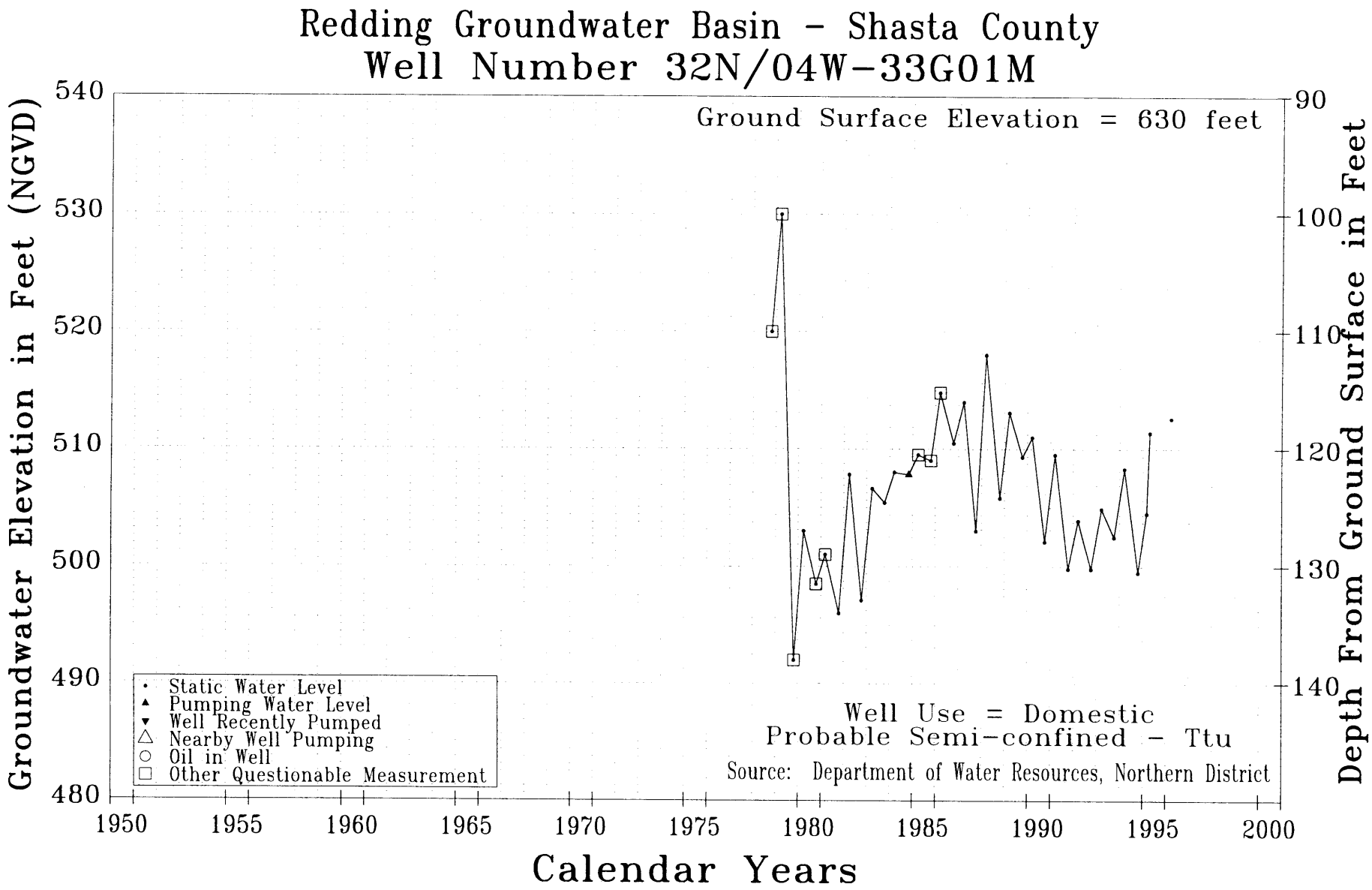

Redding Groundwater Basin - Shasta County
Well Number 31N/04W-16H01M
Ground Surface Elevation = 512 feet
Groundwater Elevation in Feet (NGVD)
420
410
400
390
380
370
360
Depth From Ground Surface in Feet
100
110
120
130
140
150
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Observation
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District


Redding Groundwater Basin - Shasta County
Well Number 31N/04W-16M01M
Ground Surface Elevation = 522 feet
Groundwater Elevation in Feet (NGVD)
450
440
430
420
410
400
390
Depth From Ground Surface in Feet
80
90
100
110
120
130
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District

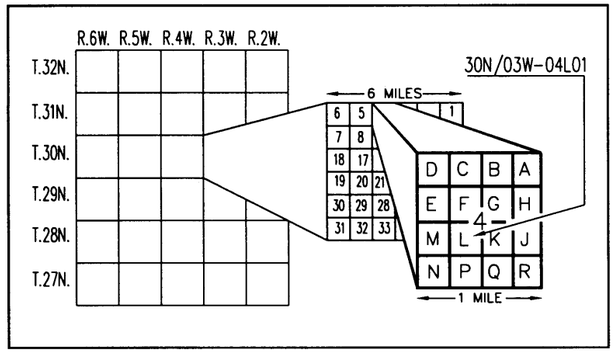

Redding Groundwater Basin - Shasta County
Well Number 31N/04W-25Q01M
Ground Surface Elevation = 489 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
60
70
80
90
100
110
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Observation
Probable Confined - Ttu
Source: Department of Water Resources, Northern District


Redding Groundwater Basin - Shasta County
Well Number 31N/04W-27P01M
Ground Surface Elevation = 492 feet
Groundwater Elevation in Feet (NGVD)
430
420
410
400
390
380
370
Depth From Ground Surface in Feet
70
80
90
100
110
120
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Irrigation
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District


Redding Groundwater Basin - Shasta County
Well Number 31N/04W-29R02M
Ground Surface Elevation = 442 feet
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Possible Unconfined - Ttu
Source: Department of Water Resources, Northern District
Groundwater Elevation in Feet (NGVD)
Depth From Ground Surface in Feet
Calendar Years
460
450
440
430
420
410
400
0
10
20
30
40
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000


Redding Groundwater Basin - Shasta County
Well Number 32N/04W-33G01M
Ground Surface Elevation = 630 feet
Groundwater Elevation in Feet (NGVD)
540
530
520
510
500
490
480
Depth From Ground Surface in Feet
90
100
110
120
130
140
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Calendar Years
Static Water Level
Pumping Water Level
Well Recently Pumped
Nearby Well Pumping
Oil in Well
Other Questionable Measurement
Well Use = Domestic
Probable Semi-confined - Ttu
Source: Department of Water Resources, Northern District

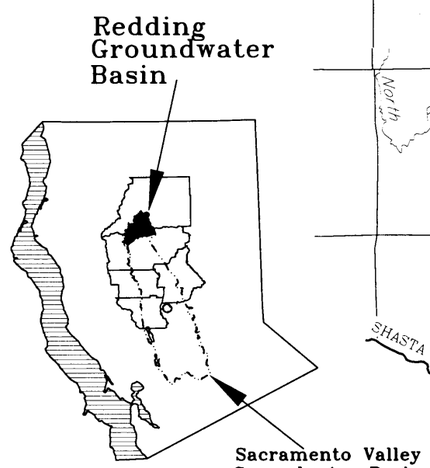
Appendix B
Location of Groundwater Level Monitoring Wells in the Redding Basin

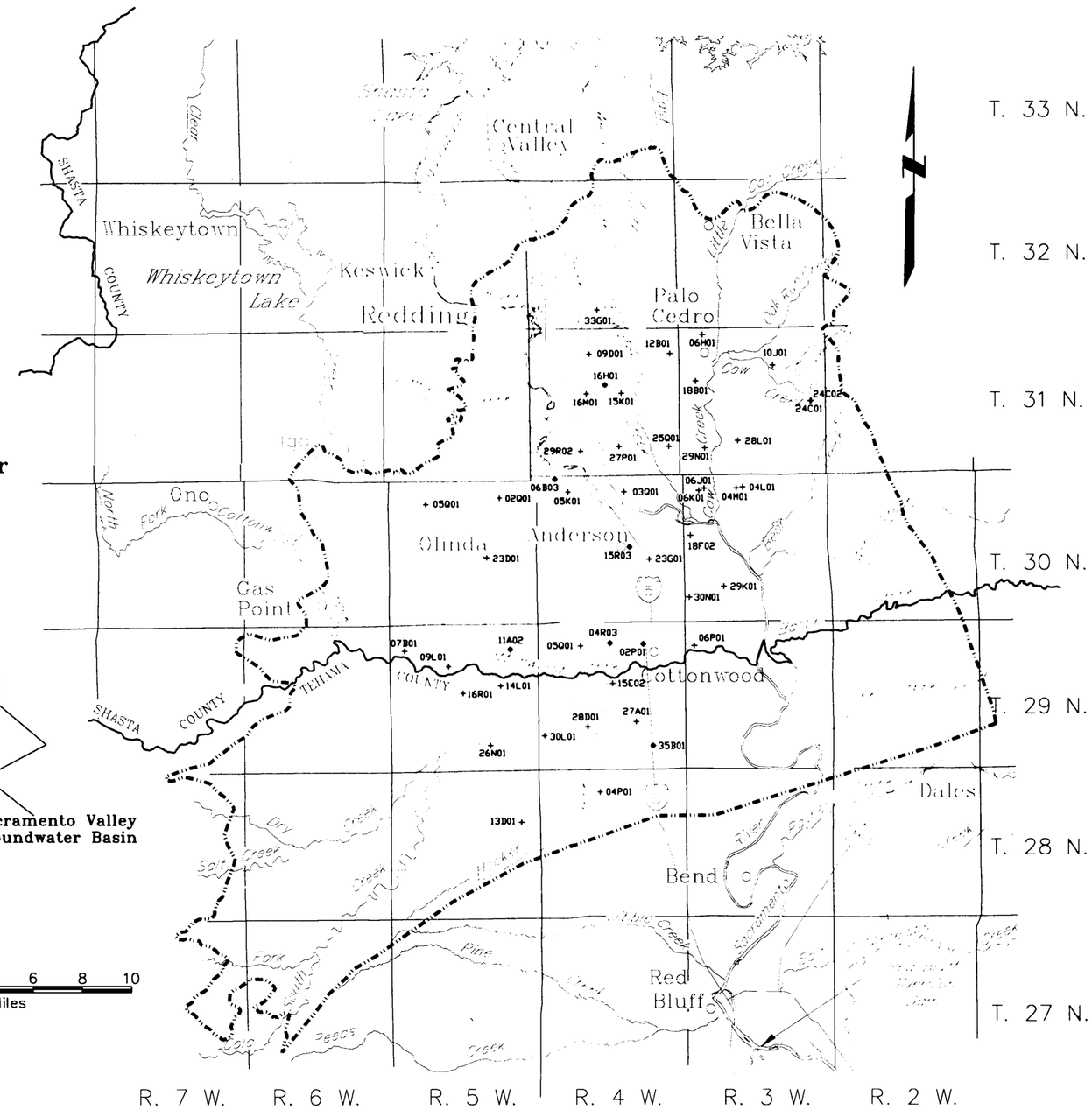


State Well Numbering System

EXPLANATION

- + Semi-Annually Monitored Well
- • Quarterly Monitored Well
- 09A01 Section Number, Tract, and Sequence Number of State Well Number which when combined with the Township and Range to Determine the Entire State Well Number.
- —— Shasta County Line
- -·-·- Approximate Groundwater Basin Boundary





0 2 4 6 8 10
Miles

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

Groundwater Levels in the Redding Groundwater Basin

LOCATION OF GROUNDWATER LEVEL MONITORING WELLS
November 1996

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