ANNUAL REPORT ON RESULTS OF MAMMOTH COMMUNITY WATER DISTRICT GROUNDWATER MONITORING PROGRAM FOR OCTOBER 1994-SEPTEMBER 1995

Prepared for
Mammoth Community Water District
Mammoth Lakes, California

By
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December 11, 1995

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December 11, 1995

Mr. Dennis Erdman, General Manager
Mammoth Community Water District
P.O. Box 597
Mammoth Lakes, CA 93546

Re: Annual Report on Groundwater Monitoring

Dear Dennis:

Submitted herewith is our annual report on the results of the District groundwater monitoring program for the period October 1994-September 1995. I appreciate the cooperation of District personnel in conducting this monitoring and providing data tabulations.

Sincerely yours,

Kenneth D. Schmidt

KDS/pt

cc: Steve Kronick

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continuation)

LIST OF TABLES

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS
(Continuation)

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INTRODUCTION

In Summer 1992, the Mammoth County Water District contracted for the drilling of five new test wells in Mammoth Lakes. One of these wells (No. 15) was converted to a supply well and pumping began on an emergency basis in Summer 1992. In December 1992, the California Department of Fish and Game filed an action against the District in Superior Court. Concerns were expressed by the Department about the potential impact of pumping of these wells on wildlife, vegetation, and fishery resources of Mammoth Creek and the Hot Creek headsprings, which is located downstream of the District wells. Kenneth D. Schmidt and Associates completed a hydrogeologic evaluation (July 6, 1993) on behalf of the District, to respond to these concerns. In August 1993, a settlement agreement was made between the Department and the District. As part of this agreement, the District was to:

1. Conduct routine monitoring in all District supply and monitor wells.
2. Install a new monitor well tapping consolidated rock at a location south of the District office.
3. Conduct monitoring in the new monitor well.
4. Prepare an annual interpretive report on the results of groundwater monitoring for the water year.

Data available to the District from Wells SC-1 and SC-2 (part of the Long Valley hydrologic monitoring program) were to be included in this evaluation. This report comprises the third annual report pursuant to the settlement agreement. The Mammoth County Water District is now the Mammoth Community Water District.

SUMMARY AND CONCLUSIONS

The District pumped 1,223 acre-feet of water from eight supply wells during the 1995 water year. A comprehensive water-level monitoring program was conducted for District supply wells and monitor wells. In addition, water-level measurements were available for two other monitor wells east of the District wells, and flow measurements were available for a spring at the University of California Valentine Reserve.

Water levels in most shallow wells tapping the uppermost glacial till strata rose significantly during 1995, during and following a period of high runoff in the watershed. Groundwater is generally present in the uppermost strata only in the westerly part of the area, in the meadow and near Mammoth Creek. Water levels in most of the monitor wells tapping the consolidated rock rose substantially during the 1995 water year. A water-level elevation contour map was prepared for September 1995. This map and other information indicates that the extent of the cone of depression due to pumping of District wells was limited in size, and did not extend to the easterly District monitor well (No. 24).

The results of water quality monitoring indicate no significant changes during the water year, compared to previously.

The results of the 1994-95 monitoring indicate that District pumping did not influence Mammoth Creek streamflow or the spring at the Valentine Reserve. In addition, water-level declines due to pumping did not extend beyond the vicinity of the well field. Thus there was no influence on the Hot Creek headsprings, which are much more distant then the monitor wells utilized for the District monitoring program.

WELL CONSTRUCTION DATA

Figure 1 shows locations of District wells, a private supply well, a subsurface geologic cross section, two other monitor wells to the east (SC-1 and SC-2), and the spring area at the Valentine Reserve. Table 1 summarizes construction data for the District supply wells. All of these wells tap consolidated rock, primarily basalt and scoria layers, and some also tap interbedded glacial till and conglomerate. Well No. 1 has been in service since the 1970's. Wells No. 6 and 10 have been in service since 1988. These three wells are termed the "earlier" District supply wells in this report. Well No. 15 was first put in service in July 1992 on an emergency basis. Well No. 18 was put in service in September 1994. Wells No. 16 and 20 were put in service in March 1995, and Well No. 17 was put in service in June 1995. Wells put in service in 1992-95 are termed the "newer" District supply wells in this report. Wells No. 2, 3, 4, 5, and 7 (shown in Figure 1) were not put in

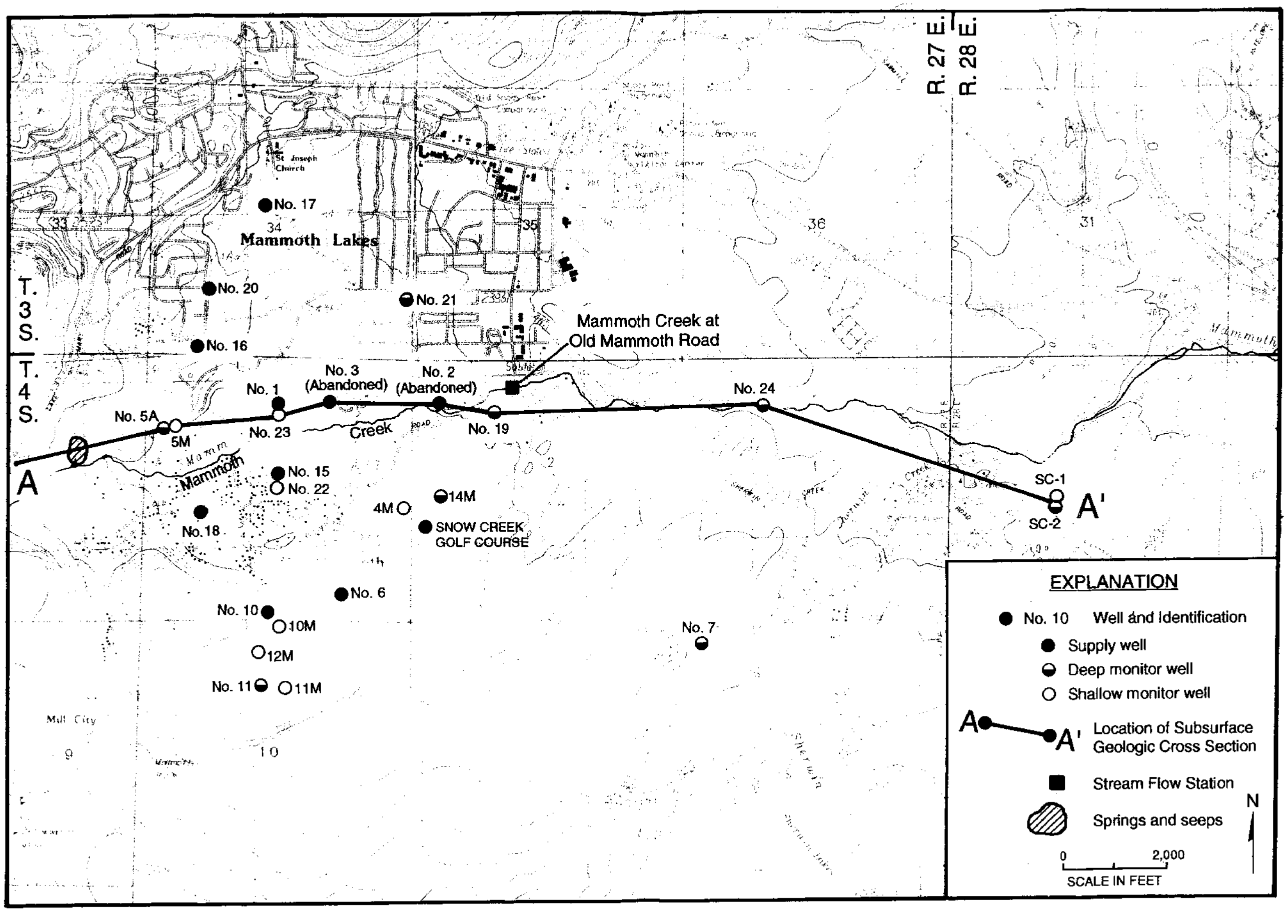


FIGURE 1 - LOCATION OF WELLS AND SUBSURFACE GEOLOGIC CROSS SECTION A-A'

TABLE 1 - CONSTRUCTION DATA FOR DISTRICT SUPPLY WELLS

Well No.	Date Drilled	Drilled Depth (feet)	Cased Depth (feet)	Perforated or Open Interval (feet)	Annular Seal (feet)
1	1976	382	370	200-370	0-90
6	11/87	670	670	146-670	0-52
10	10/87	700	700	136-700	0-52
15	8/92	720	407	407-720	0-135
16	8/92	710	715	420-470 500-680	0-60
17	7/92	710	513	400-710	0-60
18	8/92	710	480	90-150 240-470	0-60
20	9/92	710	420	420-710	0-60

Wells No. 16, 17, 18, and 20 were modified in June 1994 in preparation for being put into service. The test wells that were drilled in 1992 and subsequently converted to production wells are termed herein the "new District supply wells".

service because of low well yields. Wells No. 2 and 3 were subsequently destroyed, whereas the other wells were converted to monitor wells.

Table 2 summarizes construction data for District monitor wells. Five of these wells (No. 5A, 14M, 19, 21, and 24) are deep and primarily tap water in fractured volcanic rock. Well No. 7 is a deep well located south of the basalt flow and taps water in a glacial morraine near Sherwin Creek. Well No. 11 is a deep well located south of the basalt flow and taps water in glacial till and granitic rocks. Well No. 5M taps water in the shallow fractured volcanic rock, just beneath the glacial till. The remaining monitor wells are shallow and tap groundwater in the uppermost glacial till.

SUBSURFACE GEOLOGIC SECTION A-A'

Cross Section A-A' was developed during a previous evaluation, and was updated (Figure 2) by adding more recent water-level data. The locations of wells used for this section are shown in Figure 1. Cross Section A-A' shows that the uppermost till layer and volcanic rocks are continuous along the section. Groundwater has been found in the uppermost glacial till layer only in the vicinity of District Wells No. 1, 4, 6, 10, 11, 12, and 15. Most of these wells are either in the meadow or near Mammoth Creek. Water production in the District supply wells is from highly fractured rock, often scoria layers, and sometimes from interbedded glacial till. The intervening less fractured rock probably acts as local confining

TABLE 2 - CONSTRUCTION DATA FOR DISTRICT MONITOR WELLS

Well No.	Date Drilled	Drilled Depth (feet)	Cased Depth (feet)	Perforated or Open Interval (feet)	Annular Seal (feet)
4M	1984	89	89	69-89	0-50
5A	7/82 (8/93)	357	357	112-357	0-112
5M	8/93	80	80	20-75	0-20
7	8/87	480	480	290-480	0-50
10M	6/88	27	27	7-27	0-5
11	7/88	600	600	170-360	0-50
11M	6/88	43	43	5-43	0-5
12M	9/88	27	27	7-27	0-5
14M	9/88	520	501	100-310	0-100
19	8/92	700	344	200-700	0-140
21	10/92	640	145	145-640	-
22	9/92	85	85	55-85	0-25
23	9/92	65	65	30-65	0-25
24	8/93	450	430	300-450	0-20

Well No. 5 was modified in August 1993, so as to be sealed off opposite the glacial till and be perforated only opposite the volcanic rock, and re-designated Well No. 5A.

Figure 2 -

Subsurface Geologic Cross Section A-A'

(In Pocket)

layers. At Well No. 24, water was not found in the upper part of the basalt or in either of the till layers. Water in this well is in a fractured scoria layer. A lost circulation zone present in this well may influence the water level. In September 1995, there was a fairly uniform water-level slope (about 215 feet per mile) from Well No. 1 to No. 19 to No. 24. The water-level slope between Well No. 24 and SC-2 (farther east) was much less, only about 15 feet per mile.

DISTRICT PUMPAGE

Pumpage records for District supply wells are provided in Appendix A. Table 3 shows monthly pumpage from District wells during the 1995 water year. The total pumpage was 1,223 acre-feet, or 94 percent of that for the previous water year. Of this, 97 acre-feet were from Well No. 1, 536 acre-feet were from Wells No. 6 and 10, 380 acre-feet were from Wells No. 15 and 18, and 210 acre-feet were from Wells No. 16, 17, and 20. An additional 81 acre-feet of pumpage was measured between August 4 and October 22, 1995 from the Snow Creek Golf Course Well (in the general vicinity of Well No. 14M). This well is owned by Dempsey Construction and used to supply the golf course. This is the first water year that pumpage records have been available for this well.

WATER LEVELS

District Supply Wells

Water-level measurements (static and pumping) for District

TABLE 3 - PUMPAGE FROM DISTRICT WELLS (ACRE-FEET)

Month	No. 1	No. 6	No. 10	No. 15	No. 16	No. 17	No. 18	No. 20	Total (Rounded)
Oct 94	14.7	0.0	0.0	10.9	0.0	0.0	8.8	0.0	34
Nov	19.2	5.1	0.0	6.9	0.0	0.0	0.0	0.0	31
Dec	15.1	31.8	0.0	18.3	0.0	0.0	0.0	0.0	65
Jan 95	15.7	7.7	15.5	65.3	0.0	0.0	5.2	0.0	109
Feb	10.6	0.0	0.0	84.4	0.0	0.0	0.0	0.0	95
Mar	6.6	24.6	26.9	56.5	1.6	0.0	0.6	1.8	119
Apr	15.0	20.5	21.7	43.1	4.6	0.0	0.1	2.7	108
May	0.0	6.5	7.5	14.6	35.7	0.0	0.0	0.4	65
June	0.0	1.2	2.0	1.3	9.4	14.3	0.1	43.6	72
July	0.0	21.6	53.2	14.8	0.0	13.9	0.0	49.3	153
Aug	0.0	65.5	113.7	30.2	0.0	15.7	4.2	3.3	233
Sept	0.0	39.1	71.7	14.4	0.0	0.0	0.1	13.8	139
Total (Rounded)	97	224	312	361	51	44	19	115	1,223

supply wells are provided in Appendix A. Water-level hydrographs for the earlier wells (No. 1, 6, and 10) are provided in Appendix B.

New Wells

Figure 3 is a water-level and pumpage hydrograph for Well No. 15, extending back to when it was initially put in service in July 1992. The static water level fell about 80 feet after several months of pumping, and has normally ranged from about 260 to 280 feet during periods when the well was being used. In Fall 1995, the depth to water in Well No. 15 was about the same as in Spring 1994. Depth to water in Well No. 15 appears to be influenced primarily by the previous pumping history of the well. During periods when the well has not been used for supply (i.e., late 1993-early 1994), the water level substantially recovered, to depths ranging from about 235 to 245 feet.

Figure 4 is a water-level and pumpage hydrograph for Well No. 16. The water level in this well changed substantially after the casing was installed (July 1994) and after the pump was installed (February 1995). After the casing was installed and prior to the pump installation, an access tube was not in the well, and the measurements during that period were apparently affected by cascading water. The measurements for July 1994-early February 1995 are thus not considered representative. The slight water-level rise in No. 16 during July and August, 1995 appears to be due to recovery from the May-June, 1995 pumpage of this well. During

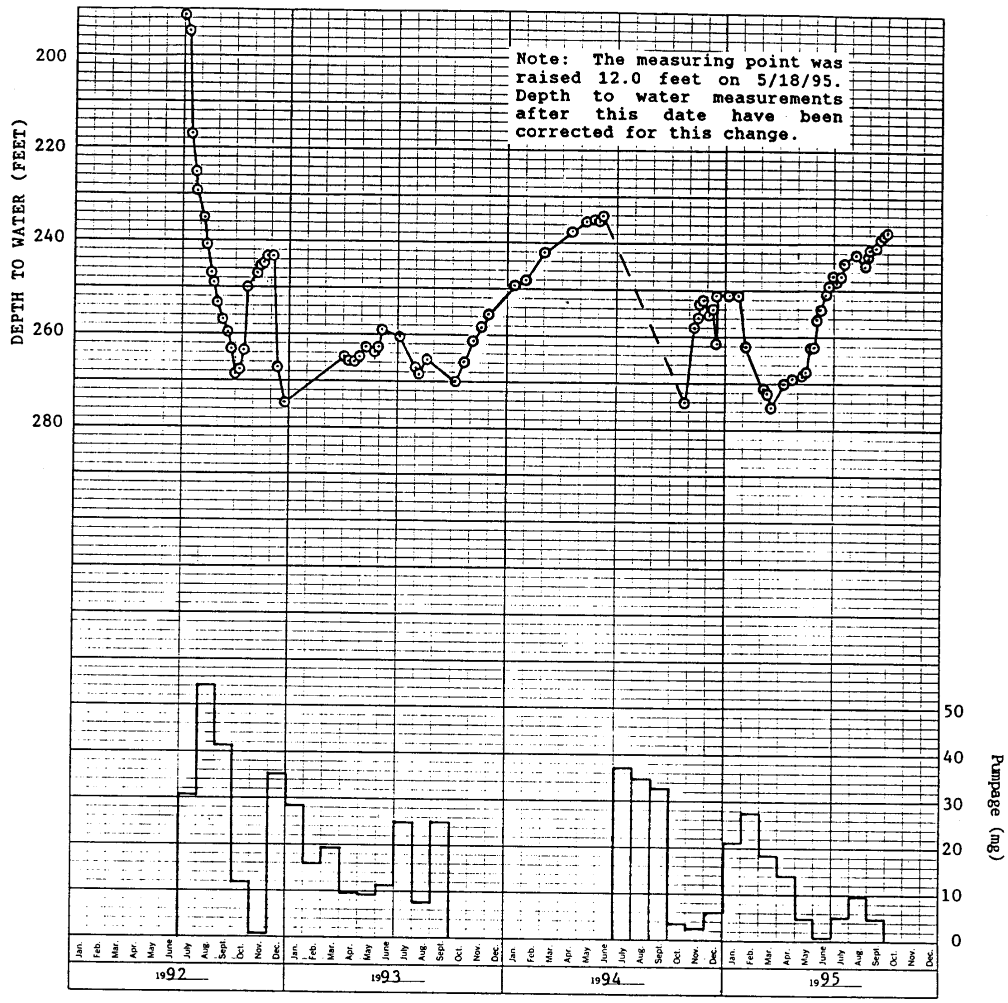


FIGURE 3 - WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 15

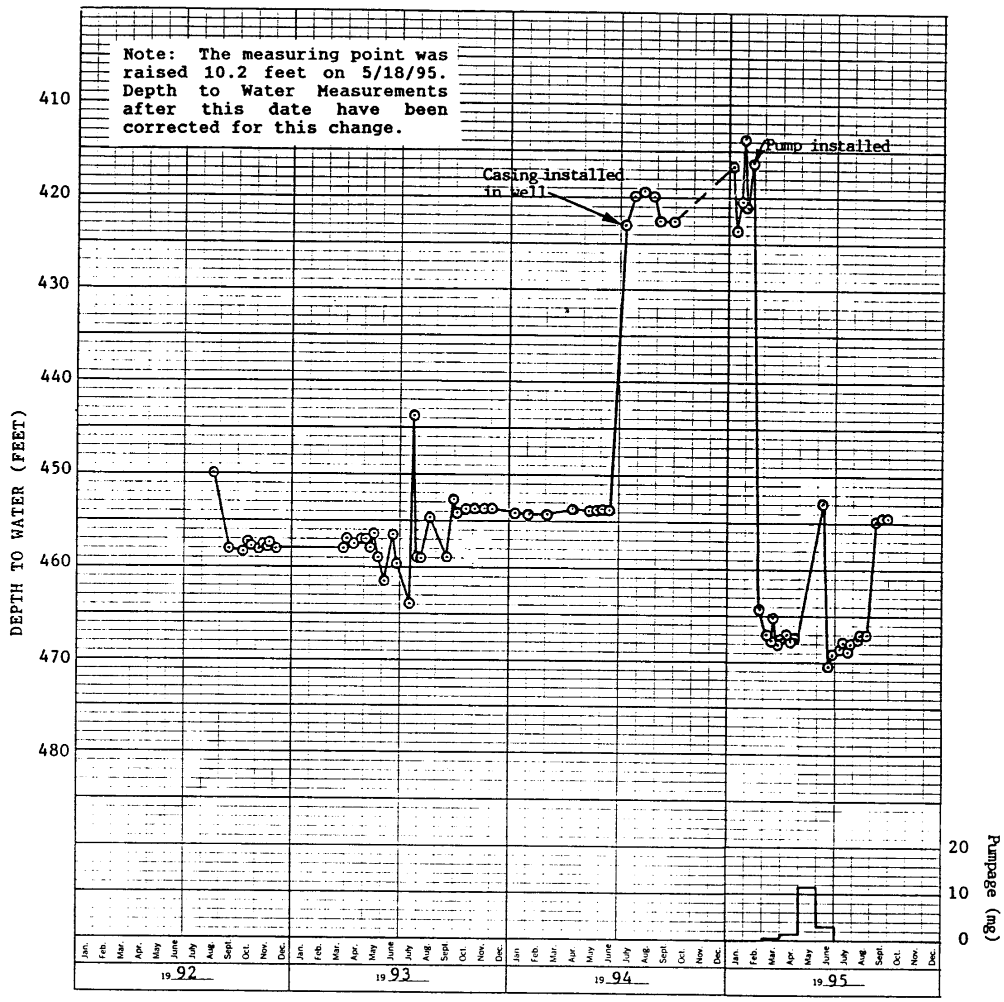


FIGURE 4 - WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 16

heavy pumping periods of Well No. 20, the static level in Well No. 16 was about 12 feet lower than during periods of lower pumping of Well No. 20. The additional recovery by September is attributed to recovery from previous pumping of Well No. 20.

Figure 5 is a water-level and pumpage hydrograph for Well No. 17. Measurements in early 1995 indicated that the water level apparently rose about eight feet, probably due to recharge. The water level in Well No. 17 appears to be influenced by pumpage of Well No. 20. During operational periods of both of these wells, the static level in Well No. 17 was about four feet lower than during periods of little pumpage. The shallowest depth to water yet measured in this well was in January-February, 1995.

Figure 6 shows water levels and pumpage for Well No. 18. The overall trend for this well during non-operational periods has been a slight water-level rise. During pumping periods, the static level averaged about ten feet lower than during non-pumping periods. There is no indication of a significant influence on the water level in this well due to pumping of other District wells. In September 1995, the water level in Well No. 18 was near that in May 1993, and was the shallowest yet measured.

Figure 7 is a water-level and pumpage hydrograph for Well No. 20. The water level in this well may be somewhat affected by pumpage of Well No. 17. However, the main reason for water level variations in Well No. 20 is pumping of the well itself. The shallowest levels in Well No. 20 to date were in February 1995.

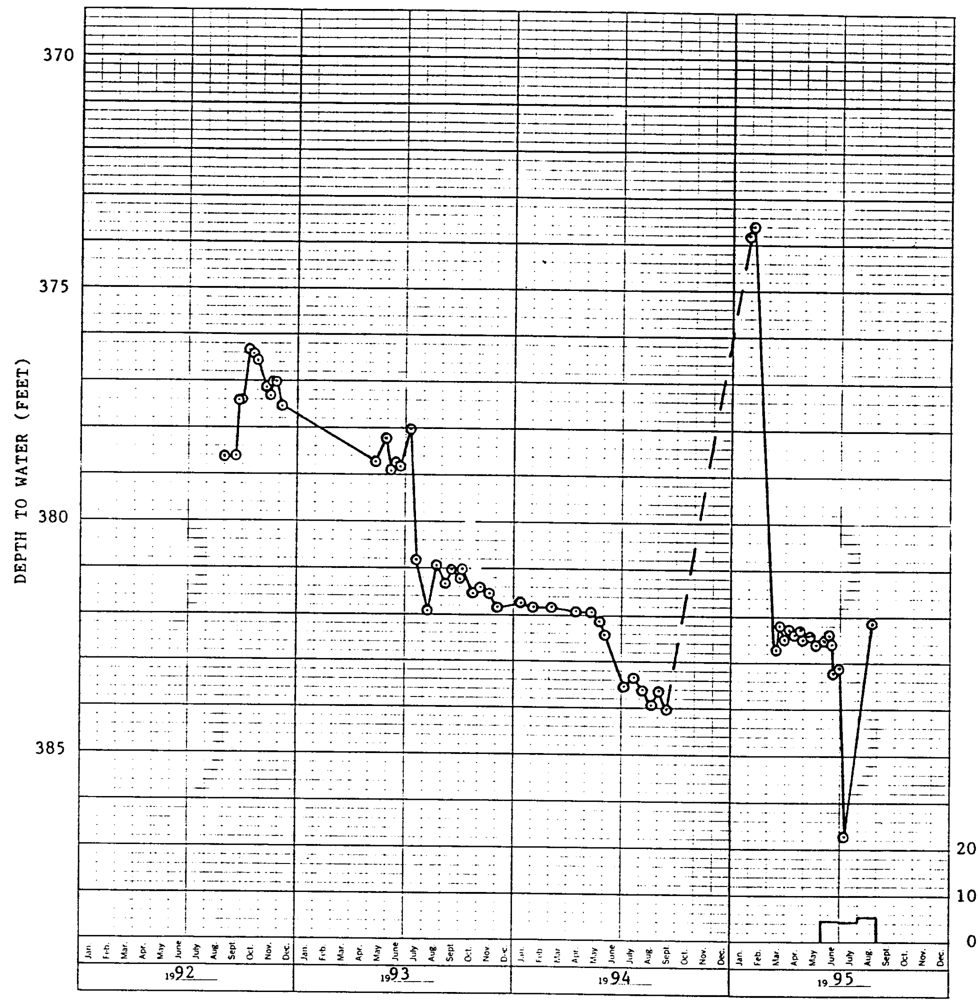


FIGURE 5 - WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 17

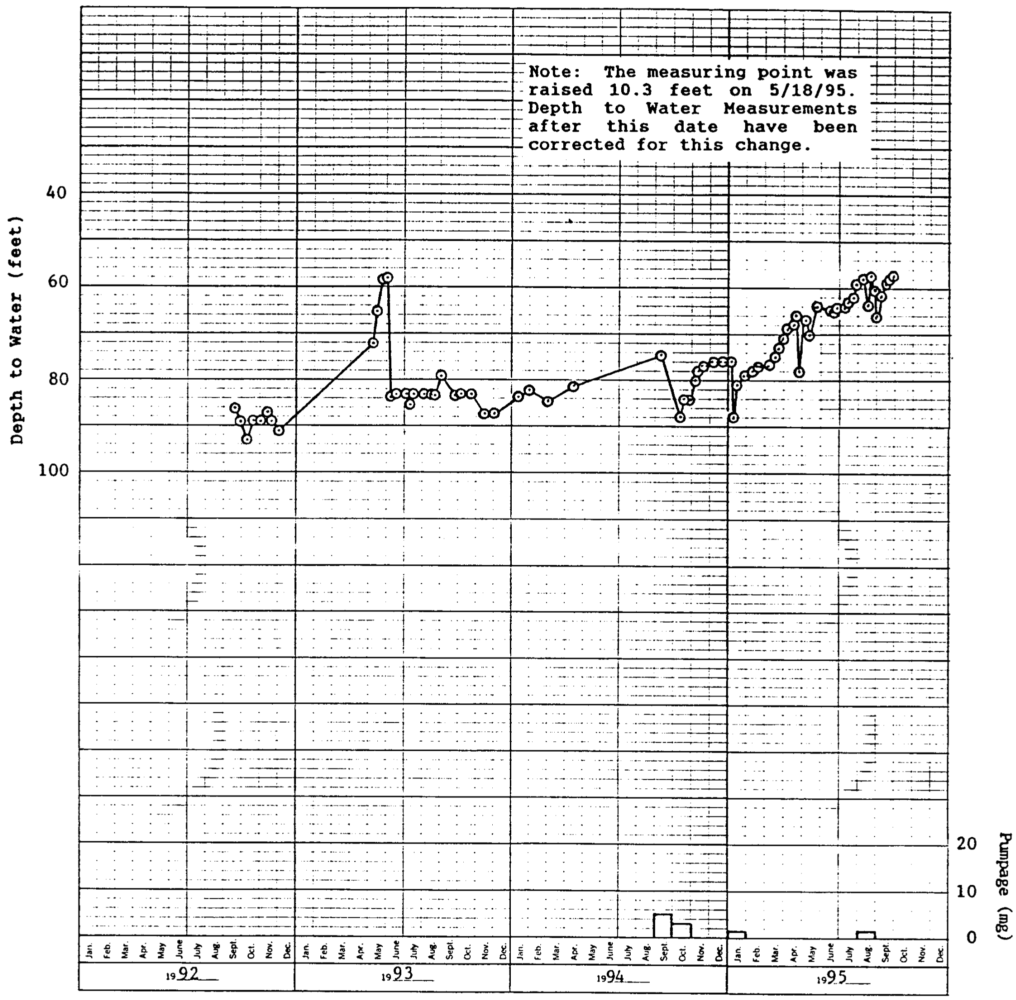


FIGURE 6 - WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 18

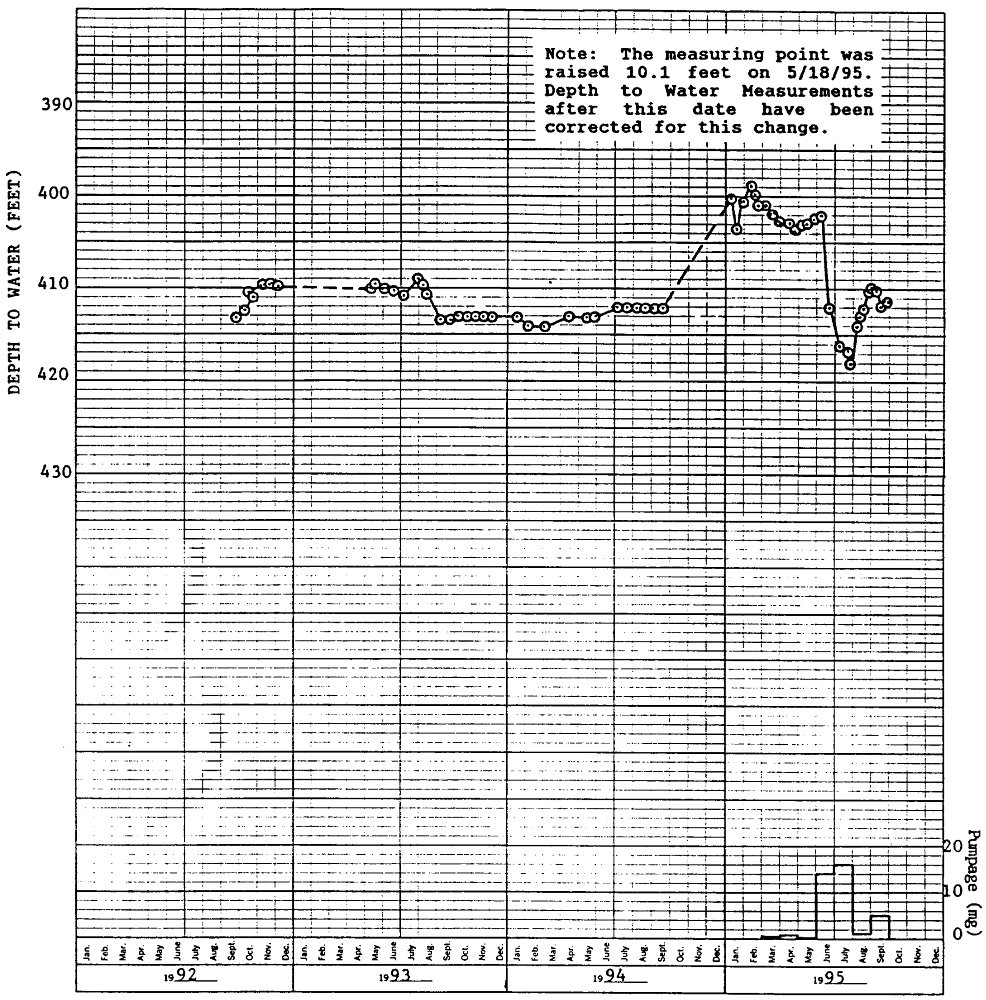


FIGURE 7 - WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 20

Earlier Wells

Water-level and pumpage hydrographs for Wells No. 1, 6, and 10 are provided in Appendix B. The static water level in Well No. 1 has ranged from about 200 feet during low pumping periods to an average of about 270 feet during heavy pumping periods (August 1994). The static water level in Well No. 6 has ranged from near the land surface during low pumping periods (June 1995) to more than 160 feet during heavy pumping periods (August-September, 1994). The static water level in Well No. 10 has ranged from less than 30 feet during low pumping periods (July 1995) to more than 160 feet during heavy pumping periods (Summer 1993). The combined pumpage of Wells No. 6 and 10 was about 270 acre-feet less during the 1995 water year than the previous year. The shallowest seasonal water level in both wells was about 60 feet shallower during 1995, than during the previous water year. Part of this is indicated to be from the decreased pumpage, and the remainder from recharge.

Deep Monitor Wells

Water-level measurements for monitor wells are provided in Appendix C. Well No. 5A is located between Well No. 1 and the Valentine Reserve North Spring (Figure 1) Measurements for Well No. 5A indicate that depth to water has ranged from near the land surface to about 6 feet. In 1995, the water level began to rise in March, and the shallowest level of record was in June. Well No. 7 is located in the Sherwin Creek campground, about one and a third miles east of Well No. 6. Measurements for Well No. 7 indicate that depth to water has ranged from 248 to 288 feet. The influence of recharge during 1993, 1994, and 1995 is apparent. In 1995, the water level began to rise significantly in June and the shallowest water level of record in this well was measured in September. The water level in this well rose 40 feet after early April 1995. The water level in this well appears to be primarily influenced by recharge from Sherwin Creek.

Well No. 11 is located in the meadow area, about one quarter mile south of Well No. 10. The water-level measurements for Well No. 11 indicate the deepest level (51 feet) in May 1993 and the shallowest level (near the land surface) in September 1995. Water levels in this well are influenced by pumping of Wells No. 6 and 10, and surface flow, particularly in the Bodle Ditch, which passes through the meadow area. The deepest water levels were for drought conditions and heavy pumping of Wells No. 6 and 10. The shallowest water levels were for wet conditions and less pumping of Wells No. 6 and 10. In 1995, the water level began to rise significantly in May, and the shallowest level yet measured was in September 1995. Well No. 14M is located about two-thirds mile east of Well No. 15. The water-level records for Well No. 14M indicate that the depth to water normally ranged from about 350 to 360 prior to June 1995. In 1995, the water level in this well began to rise in May, and rose almost 50 feet during May-August, to the shallowest depth of record, then began to slightly decline. The decline is indicated to be due to pumping from the Snow Creek Golf Course well, which began in August. This well is located about 500 feet from Well No. 14M. Water-level hydrographs for these four wells are provided in Appendix D.

Well No. 19 is located about four-fifths of a mile east of Well No. 1. The water level in Well No. 19 (Figure 8) has ranged from 322 to 345 feet deep. In 1995, the water level in this well began to rise in April-May, and rose 14 feet during August-September. Well No. 21 is located about three fourths of a mile east of Well No. 20. The water level in Well No. 21 (Figure 9) has ranged from about 285 to 370 feet in depth. The water level in this well rose about 30 feet during the first two years of record, and rose another 75 feet during the 1995 water year. The rate of rise increased after early April 1995. In September 1995, the water level was the shallowest yet measured, about 85 feet above the level measured in October 1992. The water level in this well has indicated no response due to pumping of District wells. Well No. 24 is located about one mile east of Well No. 19. Figure 10 is a water-level hydrograph for Well No. 24. Measurements for this well began in Summer 1993, and depth to water has ranged from about 382 to 392 feet. In 1995, the water level rose ten feet after March, to the shallowest depth yet measured in September. The water level in this well obviously responds primarily to recharge.

Water levels in Wells No. 19, 21, and 24 rose significantly due to recharge during water year 1995. The best explanation for the historical water-level variations in these wells is due to the amount of recharge, which is primarily related to climatic patterns. Water levels in these wells rose during and following

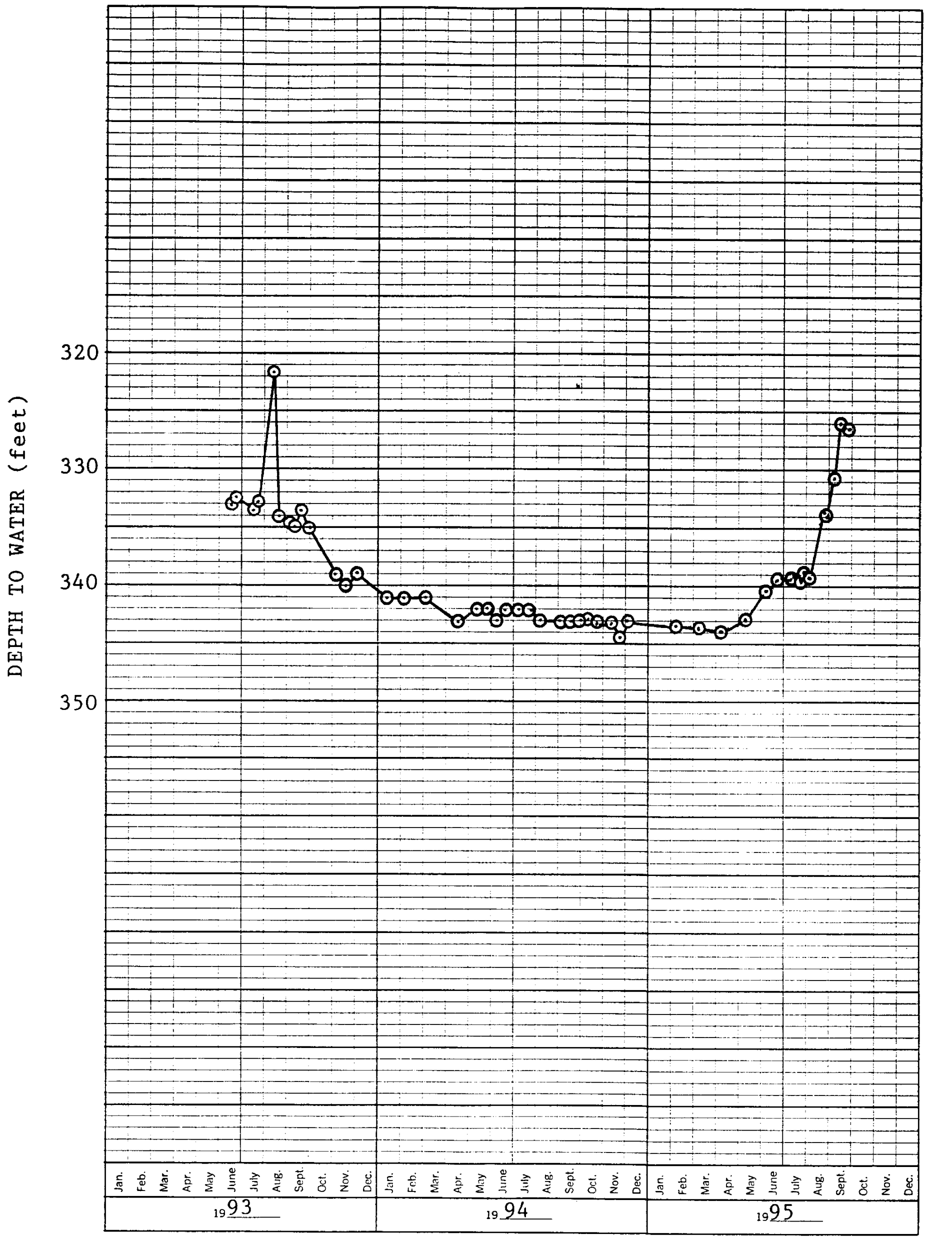


FIGURE 8 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 19

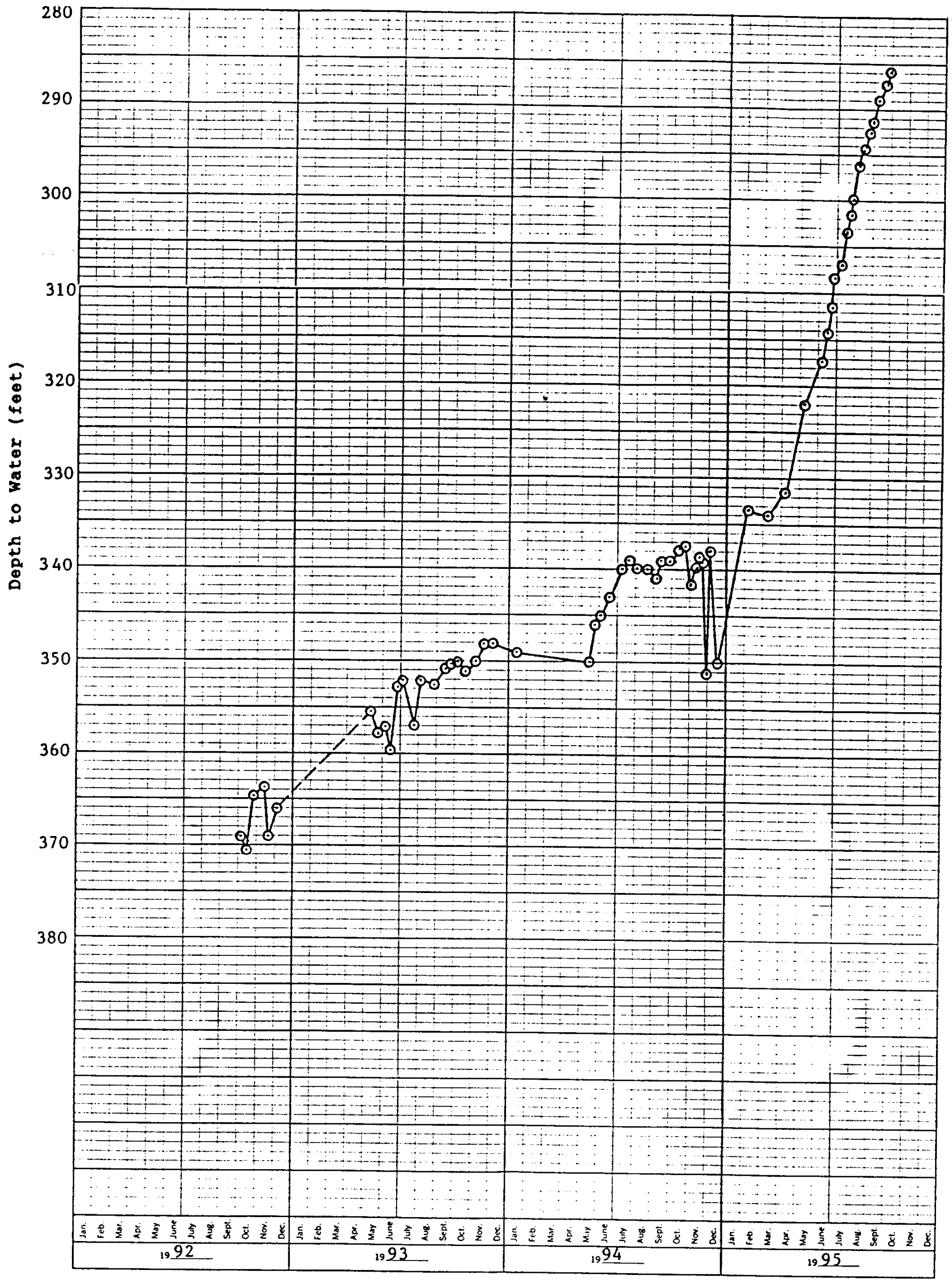


FIGURE 9 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 21

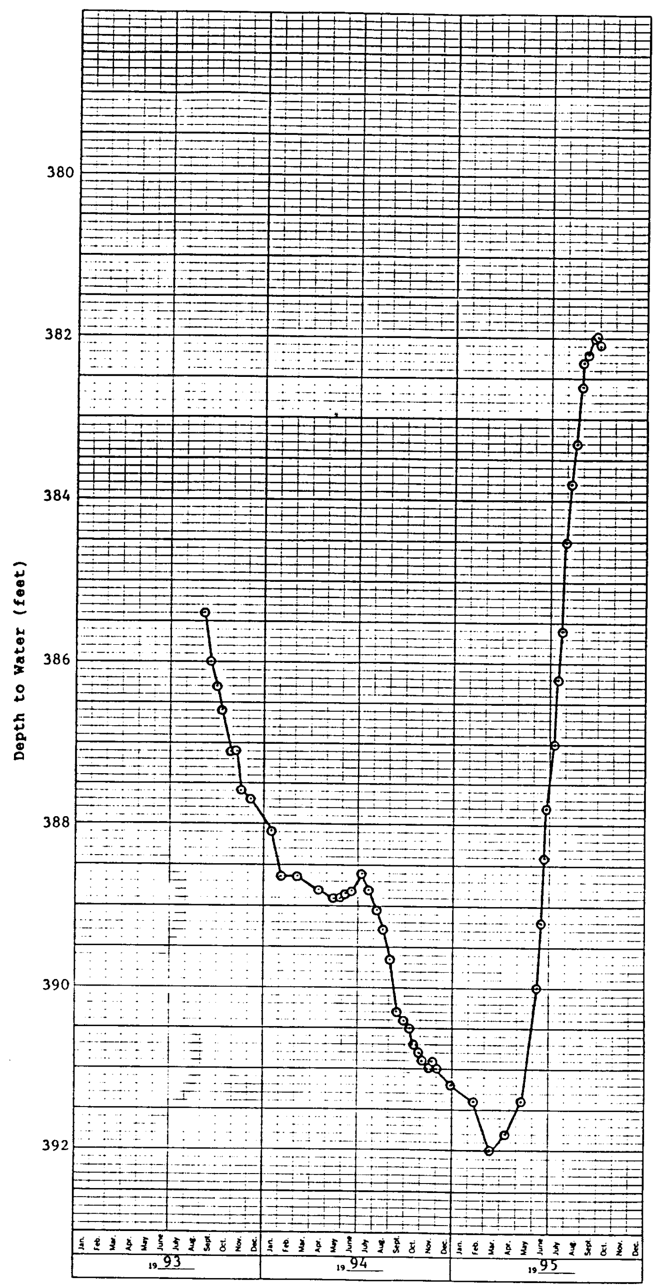


FIGURE 10 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 24

wet periods. In contrast, water levels in these wells temporarily fell during dry periods.

Figure 11 is a water-level hydrograph for SC-1, which taps groundwater in the upper part of the basalt east of the District wells. The water level in this well generally fell from June 1983 through early 1993. Then later in 1993, 1994, and 1995 the water level rose temporarily due to recharge. In 1995, the water level in this well began to rise in April and rose 40 feet, to near the shallowest level yet measured, by late July. The largest recharge event shown by these measurements was in Summer 1995, and the second largest was in Summer 1983.

Figure 12 is a water-level hydrograph for SC-2, which taps groundwater in the deeper basalt near SC-1. In 1995, the water level in this well began to rise by April and had risen about ten feet by August. Comparison of the hydrographs for SC-1 and SC-2 indicates that water levels in the two wells fluctuate similarly. However, the water-level fluctuations are less in the deeper monitor well than in the shallower monitor well, as would be expected if the fluctuations are mainly due to recharge, the source of which is from the land surface. The water level in SC-2 in September 1995 was 56 feet lower than the shallowest level measured in June 1984. This pattern is very different from that of any well in or near the District well field. Water-level variations in SC-1 and SC-2 are not indicated to be due to District well pumpage, based on the water-level hydrographs for Wells No. 19, 21, and 24 and other evidence.

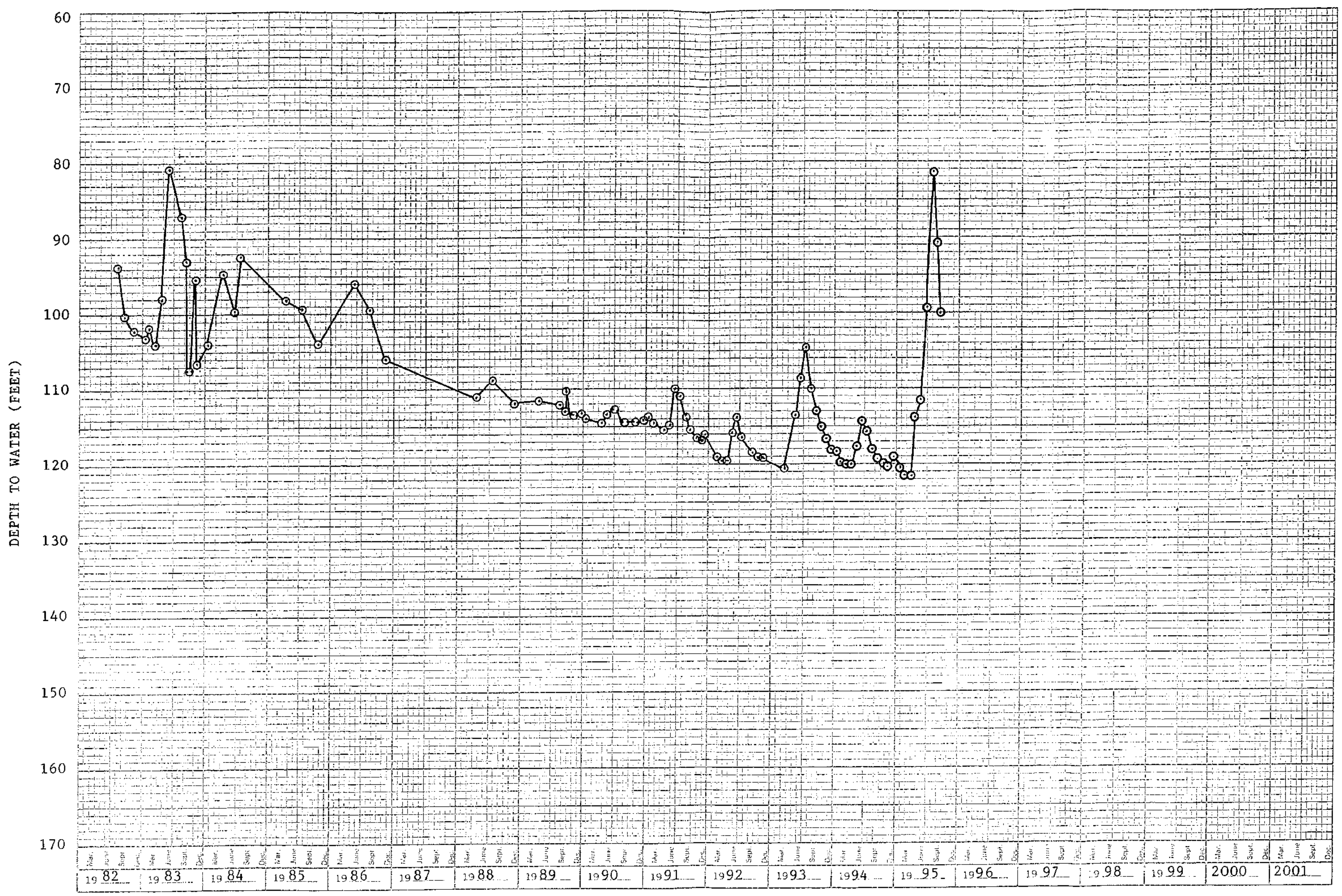


FIGURE 11 - WATER-LEVEL HYDROGRAPH FOR SC-1

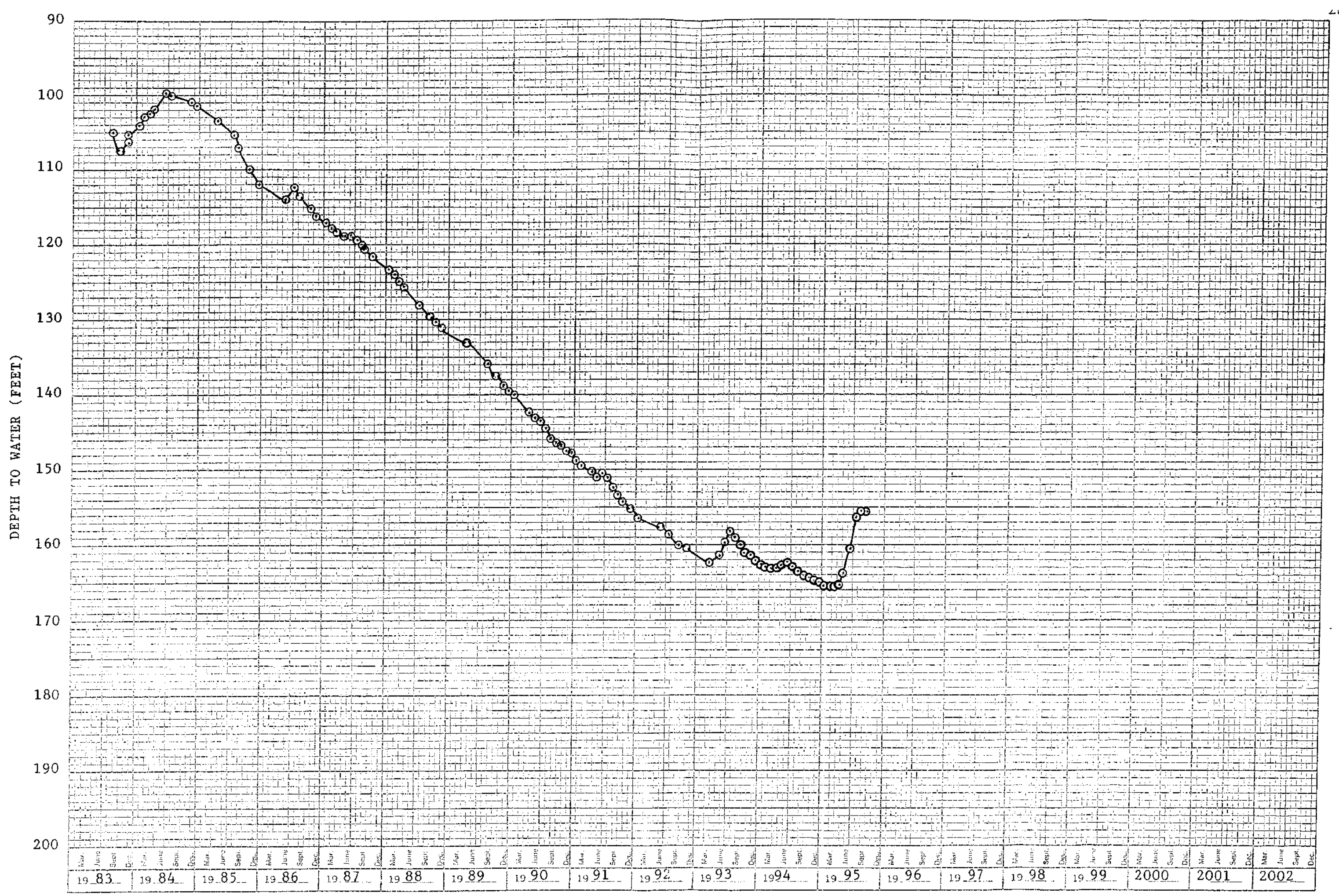


FIGURE 12 - WATER-LEVEL HYDROGRAPH FOR SC-2

Shallow Monitor Wells

A water-level hydrograph for Well No. 22 is provided in Figure 13. Pumpage of nearby Well No. 15 is also plotted on this figure. The water level in Well No. 22 is not related to pumpage of Well No. 15, which taps groundwater in the deeper consolidated rock. This shallow well has only had water in it during or following significant runoff (Figure 14). Well No. 22 was dry until June 17, 1993 and during 1994-early 1995. Depth to water in this well rose about 12 feet during May-July, 1995, due to recharge corresponding to high flows (exceeding 40 cfs) in Mammoth Creek. The water level in this well responds primarily due to recharge from Mammoth Creek streamflow, as opposed to pumping of Well No. 15. This is consistent with the monitoring results for the Summer 1993 aquifer test on Well No. 15 (Kenneth D. Schmidt and Associates, November 9, 1993). A water-level hydrograph for Well No. 23 and pumpage for nearby Well No. 1 are shown in Figure 15. Depth to water in Well No. 23 has ranged from about 5 to 16 feet during the period of record. The shallowest water levels were in the Spring and early Summer of 1993 and 1995. Depth to water in this well is not influenced by pumpage of Well No. 1, which taps groundwater in the deeper consolidated rock. Well No. 23 is located relatively close to Mammoth Creek and is clearly influenced by recharge from streamflow (Figure 16), and possibly from other local sources of recharge. There were temporary water level rises of about ten feet in Well No. 23 in both 1993 and 1995 due to recharge.

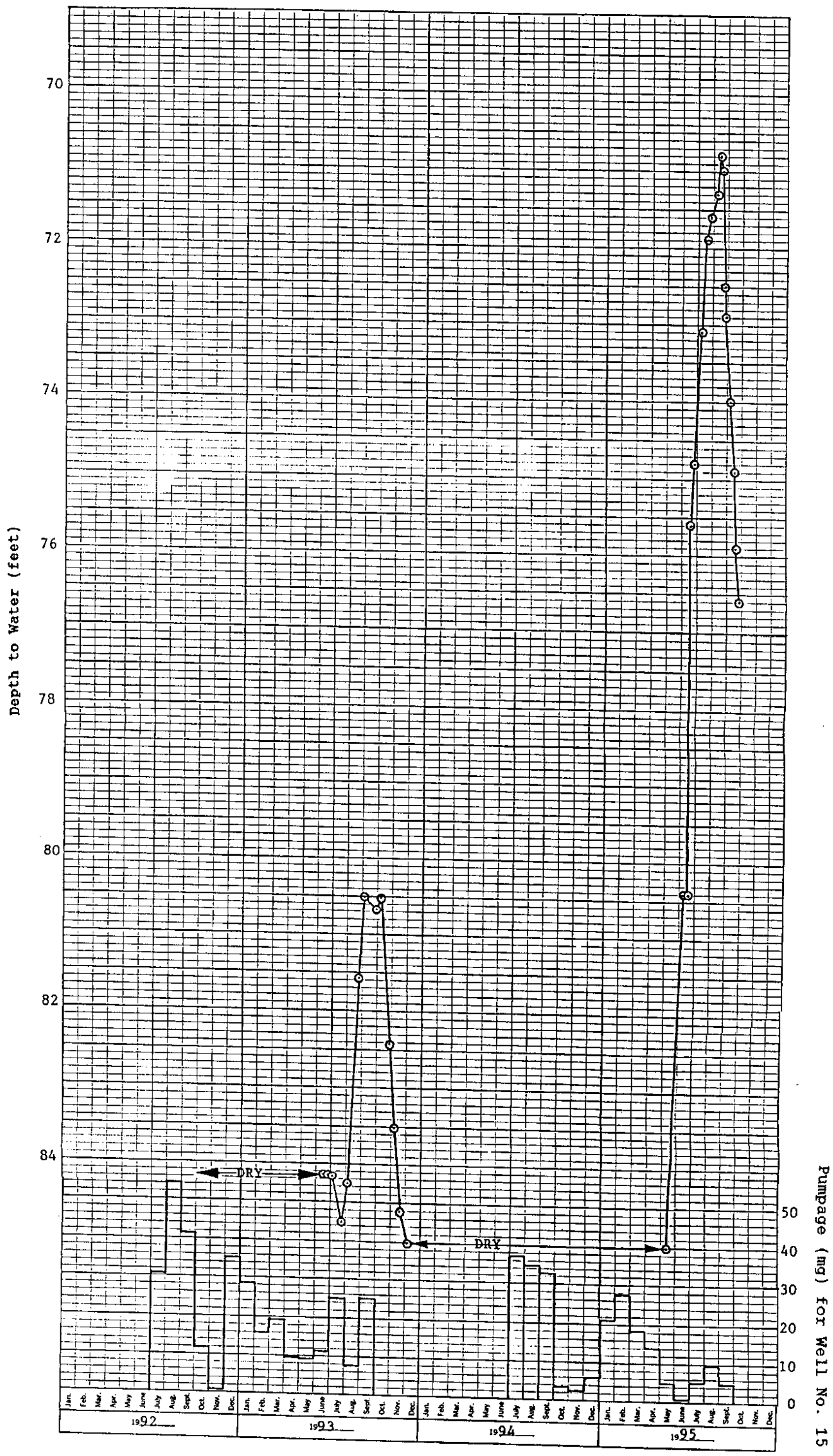


FIGURE 13 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 22 AND PUMPAGE FOR WELL NO. 15

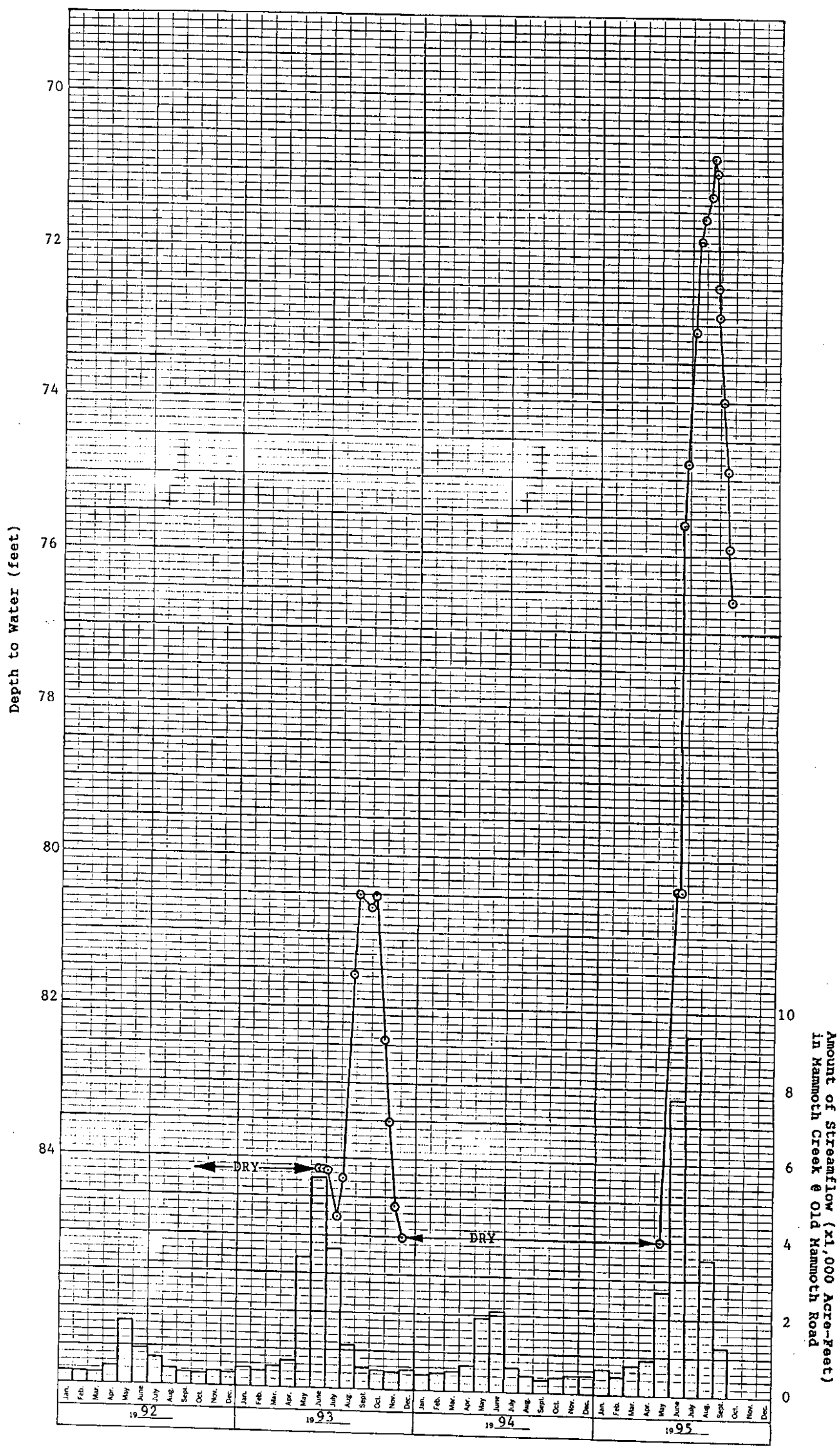


FIGURE 14 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 22 AND MAMMOTH CREEK STREAMFLOW

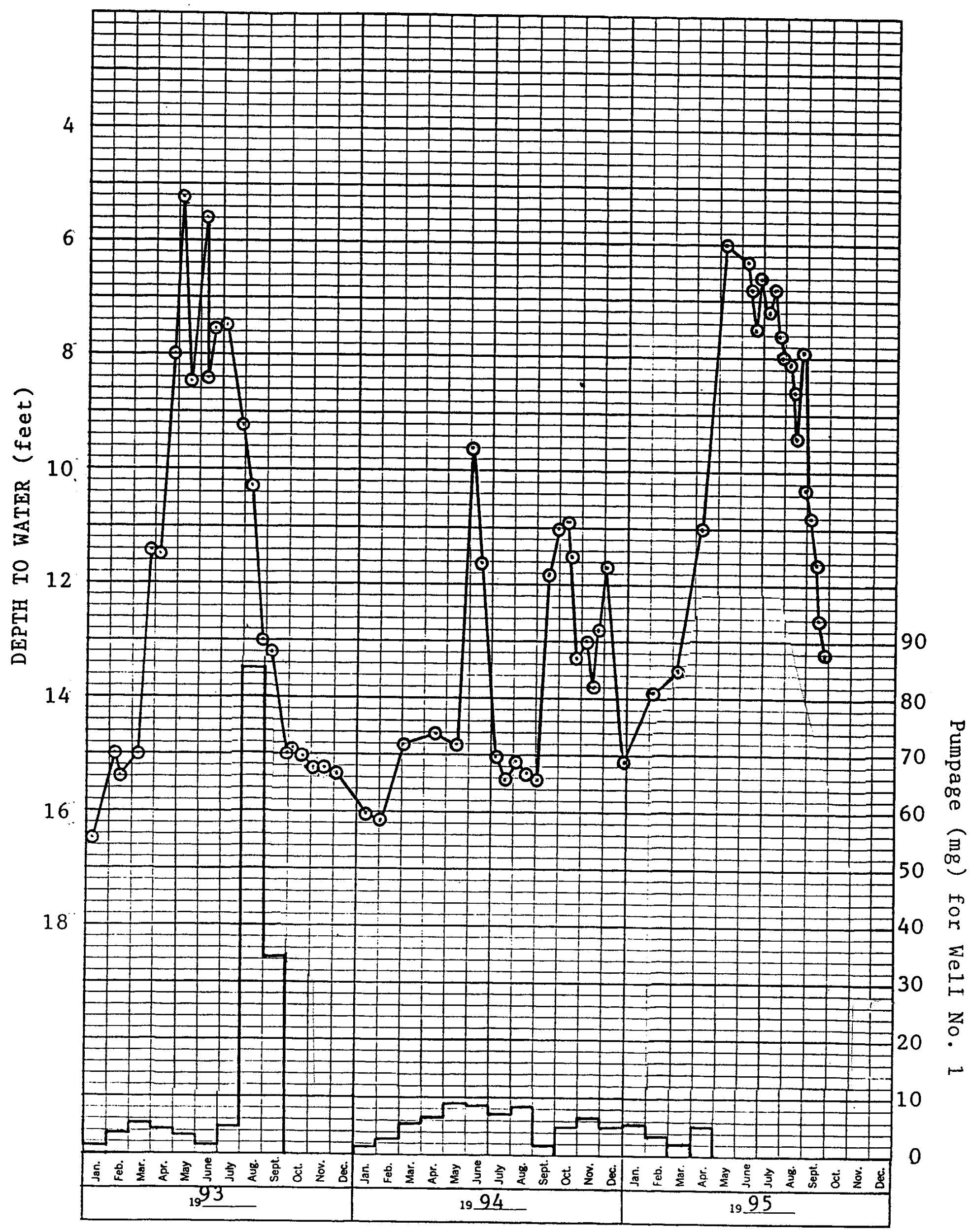


FIGURE 15 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 23 AND PUMPAGE FOR WELL NO. 1

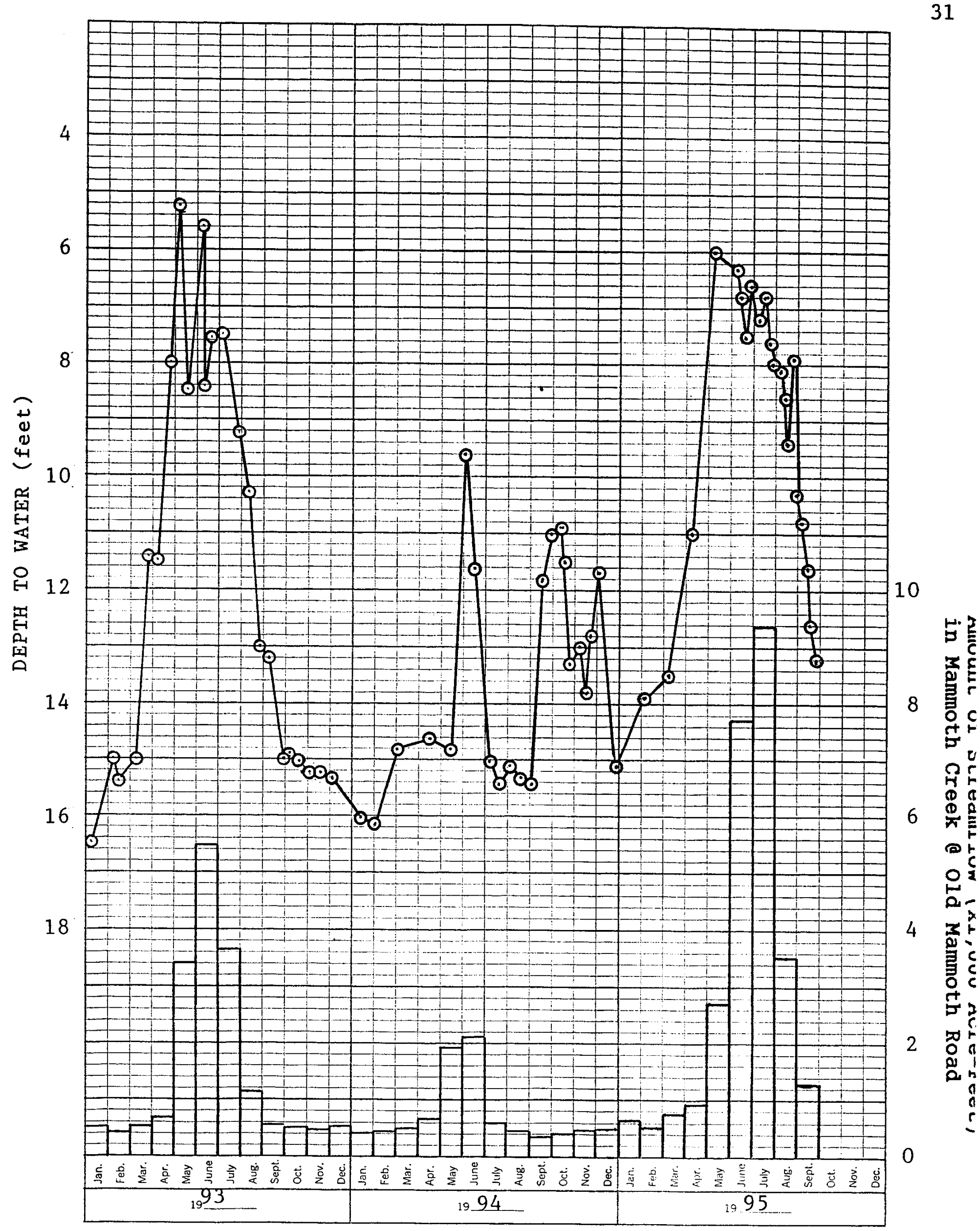


FIGURE 16 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 23 AND MAMMOTH CREEK STREAMFLOW

Water-level hydrographs for the remaining shallow monitor wells discussed are provided in Appendix D. Well No. 4M is located in the meadow area east of District Wells No. 6 and 10. The water level in this well rose during 1993 and 1995, due to significant surface water flow in the meadow. Depth to water fluctuations in this well have followed patterns of Bodle Ditch flows, rising during periods when flows are present in the ditch. In 1995, the water level in this well rose significantly after March, and the shallowest water level to date was in early June.

Well No. 5M taps the shallow volcanic rock and no water was observed in the overlying glacial till at the time of drilling. Depth to water has ranged from about 3 to 9 feet. The shallowest levels have been in the spring and early summer, and the deepest in the summer. In 1995, the water level began to rise in March and the shallowest level to date was in early June.

Well No. 10M was dry from October 1992 through June 10, 1993. Some water appeared in this well during June 17-August 19, 1993, and the well has been dry thereafter. This well is adjacent to District Well No. 10, and the water level is primarily influenced by pumping of this well and also by local recharge.

Well No. 11M is located in the southwest part of the meadow area near the Bodle Ditch. Water levels in this well have seasonal fluctuations, corresponding to flows in the ditch. The shallowest water levels have generally been in June-July. Water levels gradually declined during 1989-92, but rose significantly in 1993 and 1995. In 1995, the water level began to rise significantly in

April, and the shallowest level yet measured (about five feet) was in June.

Well No. 12M is located in the western part of the meadow area. The water level in this well responded significantly to four recharge events (1989, 1990, 1993, and 1995). The water level was below the bottom of this well from October 1992 through June 10, 1993, and from December 1993 to April 1995. In 1995, the water level in this well began to rise significantly in April, and reached the shallowest level of record in July. The water levels in all four of the shallow wells referenced thus respond significantly to recharge, often associated with flow of nearby surface water.

Water-Level Elevation Contours

Figure 17 shows water-level elevation contours for late September 1995. The hydrologic boundary is shown north of Wells No. 1 and 5A and south of Wells No. 16, 17, and 20. This boundary is believed to be present only west of a line connecting Wells No. 14M and 21. A cone of depression was evident due to pumping of District Wells No. 1, 6, 10, and 15. This cone of depression did not extend east of Well No. 19. The overall direction of groundwater flow in September 1995 was similar to that shown in the previous two annual reports. This map shows only the horizontal component of groundwater flow in the basalt and interbedded glacial till. Other evidence (i.e., water levels in SC-1 and SC-2) indicates that there is also significant downward flow of groundwater

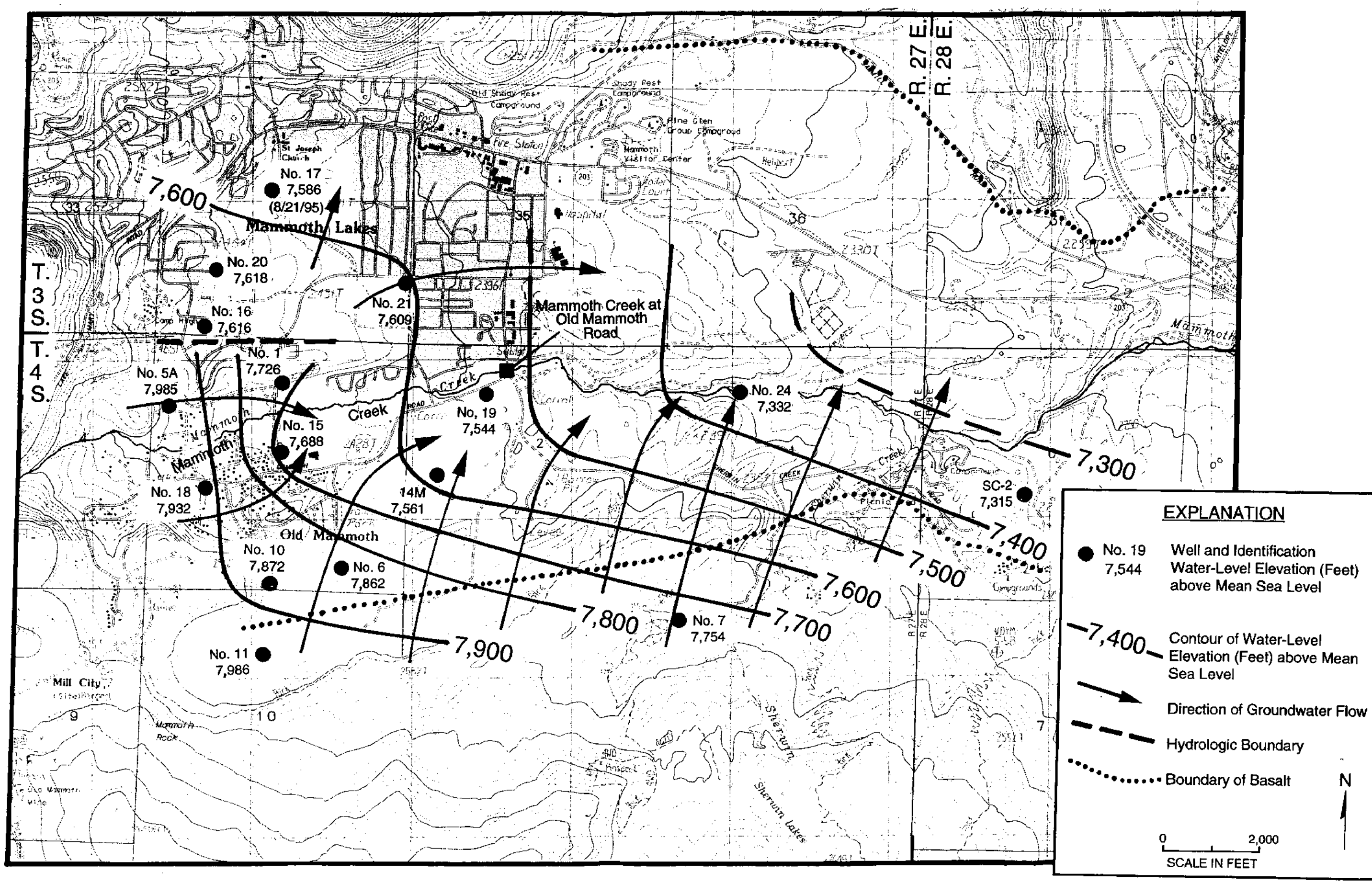


FIGURE 17 - WATER-LEVEL ELEVATIONS IN LATE SEPTEMBER 1995

in the area.

CHEMICAL QUALITY AND TEMPERATURE OF GROUNDWATER

The results of chemical analyses and temperatures of water for the supply wells and monitor wells during the 1995 water year are provided in Appendix E. The analyses for the supply wells are for water samples collected in June and early July. The shallow monitor wells were sampled in September or early October, and most of the deep monitor wells were sampled in early November. Even though the sampling wasn't all completed in the 1995 water year, the results are included herein for completeness. The coldest water (53°F or less) has normally been from shallow monitor wells in the meadow area and in water from the supply wells tapping consolidated rock, south of the hydrologic boundary. In contrast, the warmest water (60°F or greater) normally has been from the wells tapping consolidated rock, north of the hydrologic boundary, closer to the known area of relatively shallow geothermal water in Mammoth Lakes. The lowest electrical conductivity values (less than 200 micromhos per centimeter at 25°C) have normally been for shallow monitor wells and Well No. 11. The highest values (greater than 430 micromhos) have been for wells tapping the consolidated rock in the western part of the area. There is no evidence of significant changes in chemical quality or temperature of well water during water year 1995, compared to previous information in the earlier annual reports.

MAMMOTH CREEK STREAMFLOW

Records of streamflow at the Old Mammoth Road crossing during the 1995 water year are provided in Appendix F. The mean monthly flow ranged from 6.5 cfs in October 1994 to about 153 cfs in July 1995. In 1995, the flow began to rise significantly in late April, and the highest flows were during June 28-July 12.

VALENTINE RESERVE SPRINGFLOW

Rates of flow of the main spring at the University of California Eastern Sierra Valentine Reserve are provided in Appendix G. Figure 18 shows the variations in springflow during June 4-September 17, 1995. Pumpage from the closest District Wells (No. 15, 16, 18, and 20) is also shown in this figure. The springflow in early June was the highest measured during the past three summers, averaging about 120 gpm. By mid-June, the flow had decreased to about 80 gpm, and the flow continued to decrease until near the end of July. The flow then increased until mid-August, and was relatively constant thereafter. Springflow in 1995 was not correlated to pumpage of the closest District wells.

Well No. 15 was pumped primarily in early July, early August, and early September. Well No. 16 was pumped primarily in May and June and Well No. 18 was pumped at relatively low amounts during August. Well No. 20 was pumped primarily in late June and early July. Careful examination of Figure 18 indicates that the variation in total pumpage from Wells No. 15, 16, 18, and 20 (the closest new District supply wells) does not correlate with the

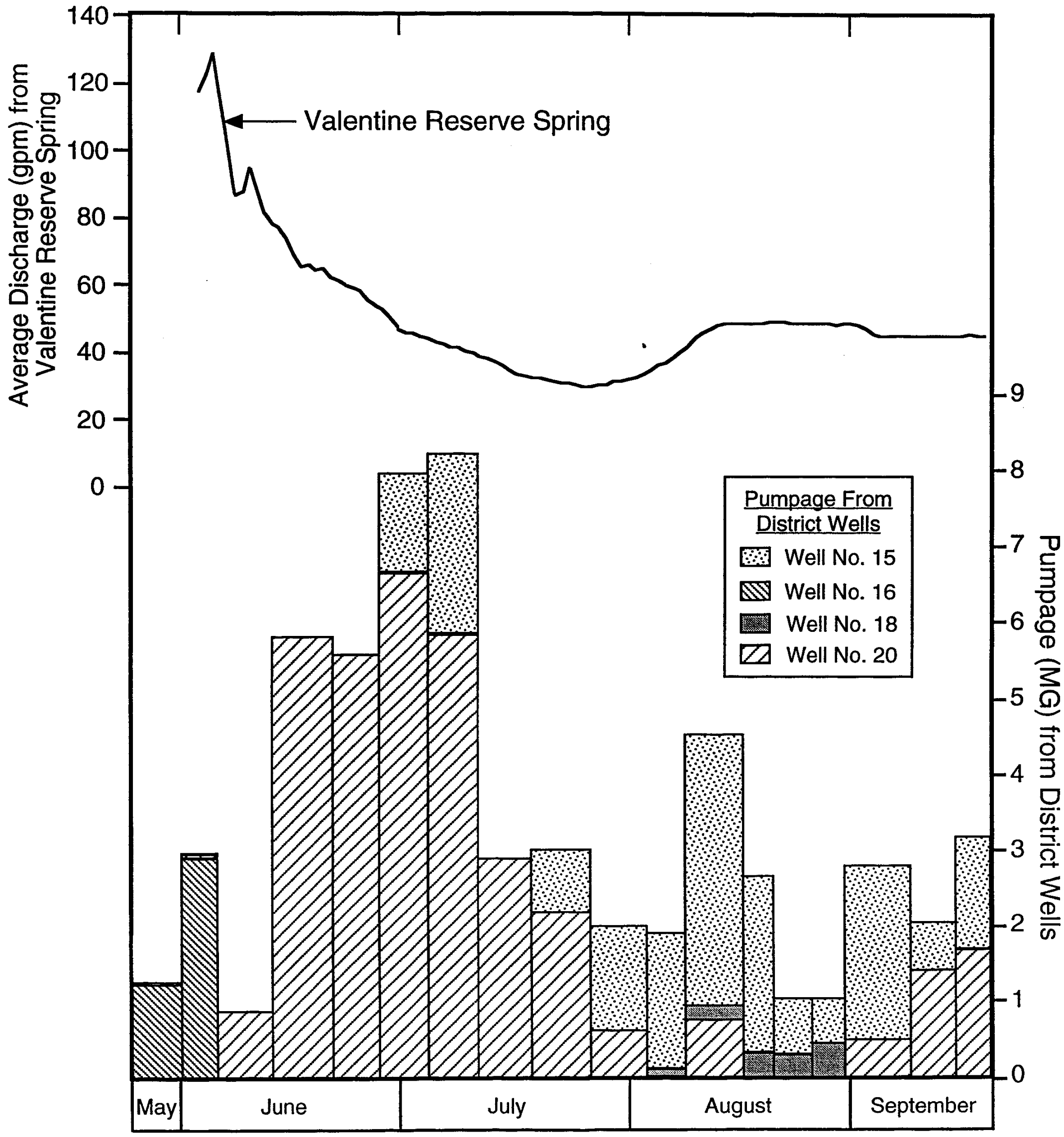


FIGURE 18 - FLOW FROM VALENTINE RESERVE SPRING AND DISTRICT WELL PUMPAGE (1995)

springflow. For example, when the total pumpage decreased substantially in mid-July, the pattern of springflow continued as before. In early August, when the total pumpage was temporarily increased significantly, the springflow rose. During the rest of August and September, the springflow remained relatively constant, in contrast to District total pumpage from those wells, which varied substantially. In addition, pumpage of the individual wells does not correlate with springflow. For example, when pumpage of Well No. 15 increased in early August, springflow increased or stayed the same. Pumpage of Wells No. 16 and 18 was limited and clearly does not relate to springflow. Also, during heavy pumping of Well No. 20 in late June and early July, the springflow fell at the same or a lesser rate than for the earlier period.

Measurements for the three year period of record (Figure 19) indicate that the pattern of springflow is related to climatic conditions and runoff. In 1995, the peak springflow occurred before the peak Mammoth Creek streamflow. This is likely because of an influence of a more local, lower elevation, source of recharge than Mammoth Creek. In both 1993 and 1995, springflow increased near the end of the water year. This would have been due to lower air temperatures, which would result in decreased evapotranspiration of water by plants in the area. Another possible factor is increased runoff from higher land on Mammoth Mountain. There was no noticeable impact of District pumping during the 1995 water year on springflow at the Valentine Reserve. This is consistent with monitoring results during the previous two years.

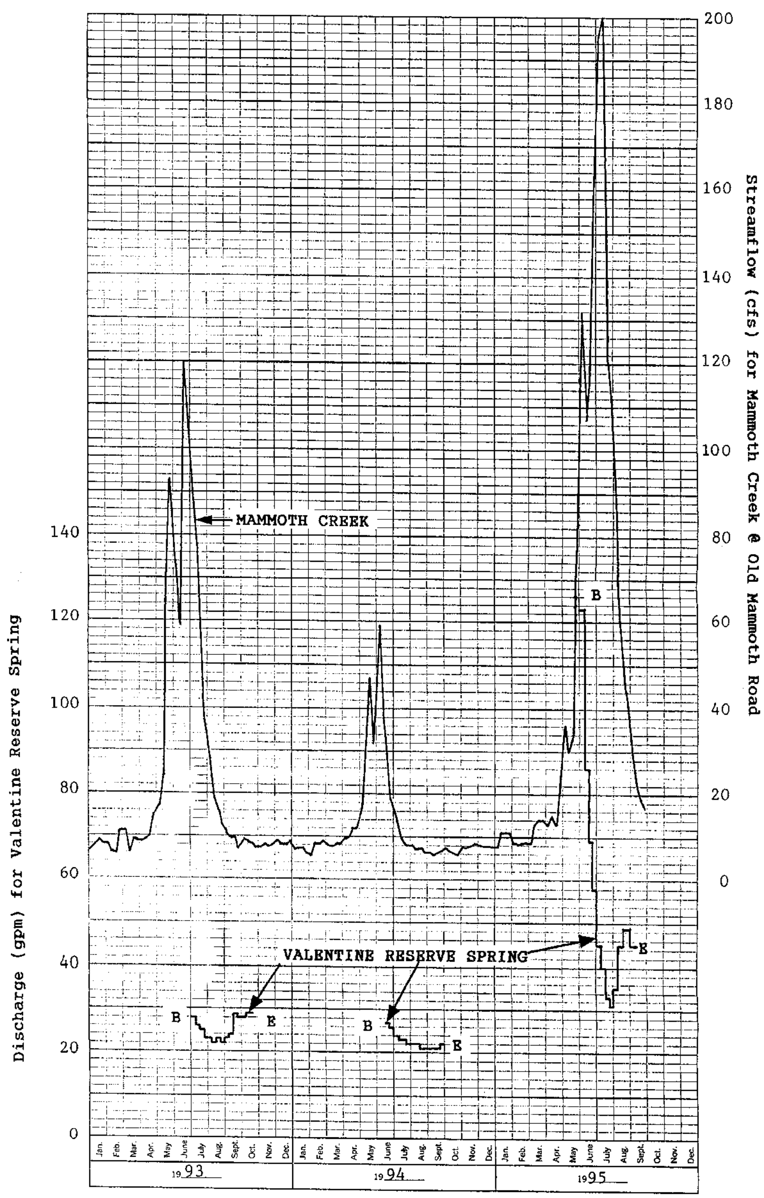


FIGURE 19 - FLOW FOR VALENTINE SPRING AND MAMMOTH CREEK STREAMFLOW (1993-95)

DATA EVALUATION AND INTERPRETATION

Water-level hydrographs for the monitor wells tapping the uppermost glacial till strata and consolidated rock in and near the District well field indicate rising water levels during the 1995 water year. Substantial recharge was indicated during the 1995 water year, coincident with substantial runoff in the Mammoth Creek watershed. This recharge is indicated to have been much more than in the 1993 or 1994 water years, by the larger water-level response in the monitor wells in 1995 compared to previously. Water-level hydrographs for Wells No. 7, 21, 24, and SC-1, east of the District well field, also indicate substantial rises. These water-level rises occurred, even though the total District pumpage was almost as great during the 1995 water year, as during the previous water year. Recharge was indicated to be the primary factor influencing water-level trends, except for some active District supply wells. Significant water-level declines due to pumping have only been observed in or near the pumped wells themselves.

The water-level elevation contour map for September 1995 confirms that the cone of depression due to pumping of District wells is localized, and does not extend east to Well No. 24. Because the water levels in the consolidated rock are well below the channel of Mammoth Creek, there is no apparent impact of District pumping on streamflow. Water levels in the most westerly deep wells (No. 5A, 16, 18, and 20) that are closest to the Valentine Reserve were relatively stable or rose during the 1995 water year. Springflow measurements at the reserve indicate much larger flow due to the wet conditions, and no impact due to District pumping. There has been no effect on the flow of the Hot Creek headsprings due to pumping of the new District supply wells.

REFERENCES

Kenneth D. Schmidt and Associates, "Results of Summer 1993 Aquifer Test, Mammoth County Water District Well No. 15", November 9, 1993, 22 p.

Kenneth D. Schmidt and Associates, "Annual Report on Results of Mammoth County Water District Groundwater Monitoring Program for October 1992-September 1993", December 1, 1993, 30 p.

Kenneth D. Schmidt and Associates, "Annual Report on Results of Mammoth Community Water District Groundwater Monitoring Program for October 1993-September 1994, December 1, 1994, 34 p.

APPENDIX A

PUMPAGE AND WATER-LEVEL DATA FOR DISTRICT SUPPLY WELLS

MAMMOTH COMMUNITY WATER DISTRICT PRODUCTION WELL LEVEL DATA (OCT/1994-SEP/1995)

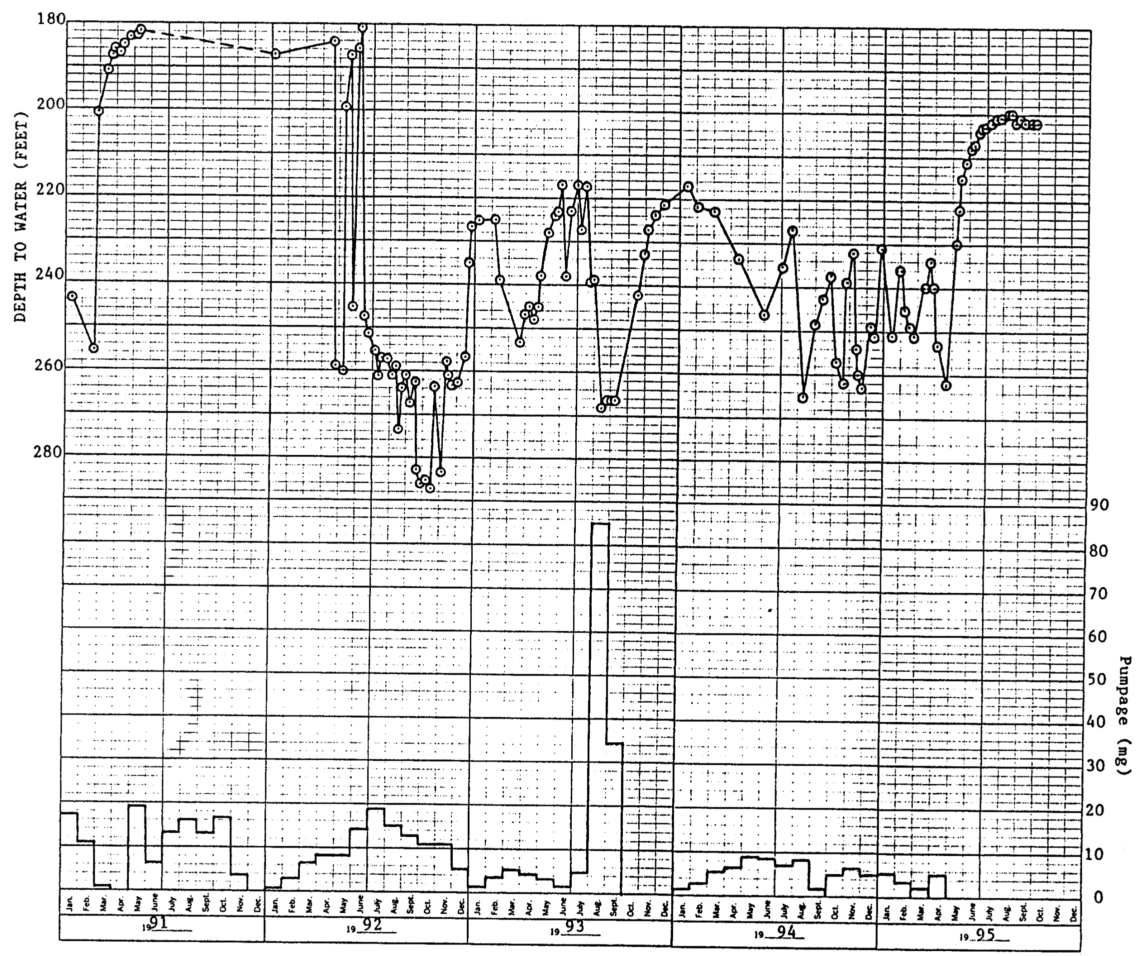
	WELL 16			WELL 17			WELL 18			WELL 20		
Date	Static Level	Pumping Level	1000 Gallons	Static Level	Pumping Level	1000 Gallons	Static Level	Pumping Level	1000 Gallons	Static Level	Pumping Level	1000 Gallons
10/6/94								-246.25	1713			
10/13/94							-88.19		521			
10/20/94							-83.67		216			
10/28/94							-84.31		415			
11/3/94							-79.93		0			
11/9/94							-78.08		0			
11/17/94							-76.85		0			
11/22/94							-77.05		0			
12/2/94							-76.20		0			
12/8/94							-76.17		0			
12/15/94							-75.69		0			
12/22/94							-75.88		0			
12/30/94							-75.71		0			
1/5/95	-416.68		0			0	-75.57		0	-400.19		0
1/12/95	-423.73		0			0	-87.90		1687	-403.60		0
1/18/95	-420.41		0			0	-81.16		0	-400.54		0
1/27/95	-413.65		0	-373.75		0	-78.95		0	-400.35		0
2/1/95	-421.11		0	-373.64		0	-78.66		0			0
2/7/95	-416.21		0			0	-77.65		0	-398.91		0
2/15/95			0			0	-77.01		0	-399.75		
2/24/95	-464.16		0			0	-76.75		0	-401.12		0
3/2/95	-466.88		0			0	-76.99		0	-401.12		0
3/8/95	-467.66		0			0	-76.05		13	-401.98		0
3/15/95	-465.11		0	-382.70		0	-74.48		97	-401.90		0
3/22/95	-468.02		472	-382.17		0	-72.73		85	-402.55		477
3/30/95	-467.48		37	-382.51		0	-70.82		0	-402.79		95
4/5/95	-467.09		12	-382.25		0	-69.04		0	-402.75		86
4/12/95	-467.77		212	-382.42		0	-68.34		0	-402.87		188
4/19/95	-467.35		66	-382.32		0	-65.78		0	-403.85		265
4/26/95		-473.05	176	-382.51		0	-78.31		23	-403.29		253
5/5/95		-476.01	2327	-382.37		0	-66.72		0	-402.93		197
5/10/95		-478.78	2304	-382.37		0	-69.91		0	-402.85		0
5/18/95		-491.50	4036	-382.61		0	-74.33		0	-412.69		0
5/25/95		-486.38	2923				-74.17		0	-412.50		0
6/1/95		-489.75	1250	-382.54		0		-84.48	0	-412.42		5
6/6/95	-463.05		2877	-382.39		0		-81.91	39	-412.15		4
6/14/95		-482.52	15	-382.64		447	-76.13		0		-441.77	885
6/22/95	-480.49		0	-383.20		2133	-75.31		0	-422.44		5828
6/28/95	-479.29		0	-383.12		1793	-74.81		0		-484.01	5595
7/5/95	-478.58		0	-386.71		947	-74.25		0	-426.3		6674
7/12/95	-478.10		0			1178	-72.92		0		-489.01	5859
7/19/95	-478.95		0			980	-72.33		0	-426.89		2928
7/27/95	-478.14		0			1148	-69.62		0	-428.16		2216
8/4/95	-477.75		0			1085	-68.21		0	-424.11		599
8/9/95	-477.16		0			646	-74.05		88	-423.21		23
8/17/95	-477.08		0			1277	-67.61		187	-422.33		762
8/21/95			0	-382.10		1017			329			0
8/26/95	-477.16		0		-386.00	1628	-70.51		297	-420.46		0
8/31/95			0			0	-76.63		454	-419.91		0
9/8/95	-464.91		0			0	-71.88		15	-420.35		474
9/14/95	-464.91		0			0	-69.27		0	-421.98		1416
9/22/95	-464.69		0			0	-68.42		0	-421.44		1694
9/29/95	-464.69		0			0	-67.62		0	-421.42		914
Total			16707			14279			6179			37437
Mean	-460.61	-482.57	418	-381.81	-386.00	366	-74.87	-137.55	117	-410.92	-471.60	960
Maximum	-480.49	-491.50	4036	-386.71	-386.00	2133	-88.19	-246.25	1713	-428.16	-489.01	6674
Minimum	-413.65	-473.05	0	-373.64	-386.00	0	-65.78	-81.91	0	-398.91	-441.77	0

MAMMOTH COMMUNITY WATER DISTRICT PRODUCTION WELL LEVEL DATA (OCT/1994-SEP/1995)

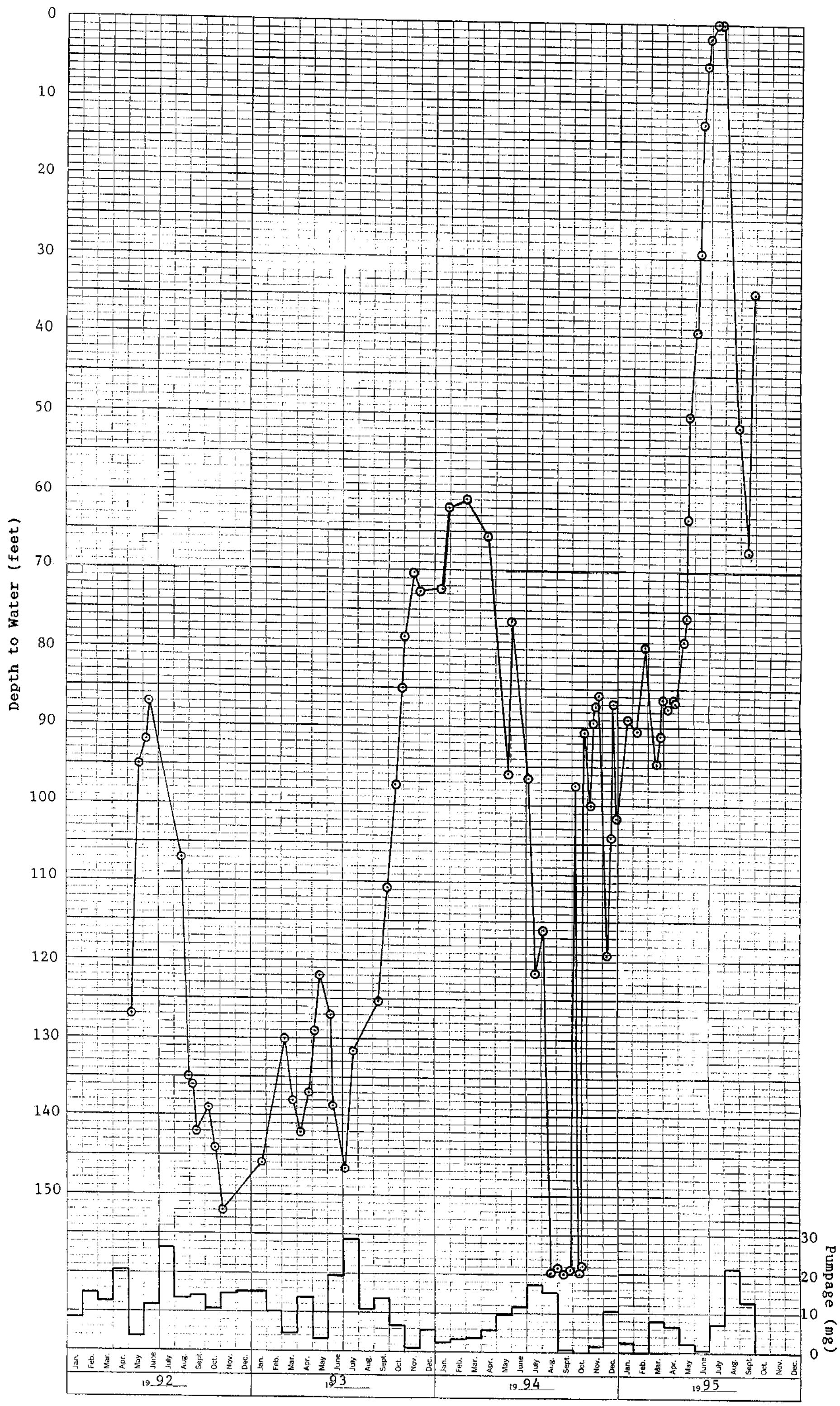
	WELL 1			WELL 6			WELL 10			WELL 16		
Date	Static Level	Pumping Level	1000 Gallons	Static Level	Pumping Level	1000 Gallons	Static Level	Pumping Level	1000 Gallons	Static Level	Pumping Level	1000 Gallons
10/6/94	-257.35		1358	-97.50		0	-122.00				-291.50	2643
10/13/94		-272.16	1275	-160.00		0	-122.00				-292.58	912
10/20/94	-261.99	-295.00	1469	-159.15		0				-274.00		0
10/28/94	-239.4		696	-90.66		0		-175.20				0
11/3/94	-232.25		0	-100.00		0	-122.25			-257.50		0
11/9/94	-254.25		891	-89.50		0	-114.45			-255.75		0
11/17/94	-259.96		2129	-87.25		14	-112.25			-252.51		0
11/22/94	-262.64		1332	-85.92		0	-110.00			-252.12		0
12/1/94		-268.75	2139		-172.92	1845	-108.25			-254.60		2539
12/8/94	-249.11		1427	-119.42		3117	-107.67			-253.50		1182
12/15/94		-266.75	1499	-104.11		4605		-158.16		-250.75		0
12/22/94	-250.75		1320	-86.98		0		-182.16			-262.92	1137
12/30/94	-230.51		275	-101.75		2445		-174.00			-265.25	2893
1/5/95		-261.38	862							-250.92		2825
1/12/95	-251.00		608								-264.25	3492
1/18/95		-265.75	1720	-88.95		2515	-113.45		5046	-251.33		4438
1/27/95	-236.25		1643			0	-85.25		0		-272.75	7315
2/1/95	-235.96		542			0	-109.75		0	-261.6		4576
2/7/95	-245.00		638	-90.62		0	-107.85		0		-277.66	6015
2/15/95	-249.16		936			0	-105.61		0		-278.66	7740
2/24/95	-250.66		1157	-79.75		0	-103.68		0		-283.99	9034
3/2/95		-254.61	909							-271.05		5681
3/8/95	-239.77		384		-189.05	1643	-105.45		2288	-271.86		3695
3/15/95	-240.05		649	-94.51		2561	-108.91		2869	-275.07		4487
3/22/95	-233.92		0	-91.12		1773	-109.13		1587		-283.35	4073
3/30/95	-239.83		721	-86.27		1745	-107.25		1799		-282.21	3717
4/5/95	-252.52		606	-87.45		1662		-148.81	1295	-270.25		3184
4/12/95		-264.71	988		-178.91	1582	-109.06		2072	-270.08		3422
4/19/95		-269.00	1889	-86.48		1440	-107.10		1535	-269.37		3143
4/26/95	-262.29		1496	-86.83		1484	-106.73		1550	-269.29		3123
5/5/95	-230.11		2	-78.91		1737	-100.09		1909	-268.78		3816
5/10/95	-221.83		0	-75.66		1034	-97.81		1235	-267.73		2288
5/18/95	-215.25		0	-63.16		54	-86.25		80	-274.50		138
5/25/95	-211.33		0	-50.11		53	-73.35		56	-274.38		200
6/1/95	-208.15		2	-39.58		30	-72.72		25	-268.25		16
6/6/95	-206.65		0	-29.37		14	-60.57		64	-266.04		40
6/14/95	-204.37		0	-12.94		0	-45.67		0	-263.20		0
6/22/95	-203.28		0	-5.25		0	-36.16		0	-260.66		0
6/28/95	-202.65		0	-1.75		0	-31.58		0	-258.97		0
7/5/95	-202.16		0		-160.80	1336	-35.58		2016	-259.91		1312
7/12/95	-200.97		3	0		1628	-28.33		1824	-258.75		2376
7/19/95	-200.55		0	0		635	-27.78		1824	-256.03		0
7/27/95	-200.58		0			2109	-31.48		8416		-271.25	812
8/4/95	-200.05		0			3407		-102.49	7680	-254.52		1420
8/9/95	-200.08		0			3576		-107.35	5984		-268.15	1812
8/17/95	-200.49		0			5582		-116.16	10464			3600
8/21/95					-160.01	3322			5120	-256.89		2356
8/26/95	-201.46		0		-172.48	3306		-114.21	6208	-254.97		752
8/31/95	-201.36		0	-51.41		3866	-59.42		5440	-253.58		608
9/8/95	-201.61		0		-171.91	4474	-54.16		7246	-252.86		2336
9/14/95	-201.74		0	-67.33		2876		-114.47	4594	-251.25		664
9/22/95	-202.02		0		-172.15	3300		-117.66	6400	-250.56		1500
9/29/95	-202.26		0	-34.47		2102	-55.26		5120	-249.68		188
Total			31565			72872			101746			117500
Mean	-226.22	-268.68	607	-73.83	-172.28	1457	-86.33	-137.33	2750	-260.87	-276.50	2217
Maximum	-262.64	-295.00	2139	-160.00	-189.05	5582	-122.25	-182.16	10464	-275.07	-292.58	9034
Minimum	-200.05	-254.61	0	0.00	-160.01	0	-27.78	-102.49	0	-249.68	-262.92	0

APPENDIX B

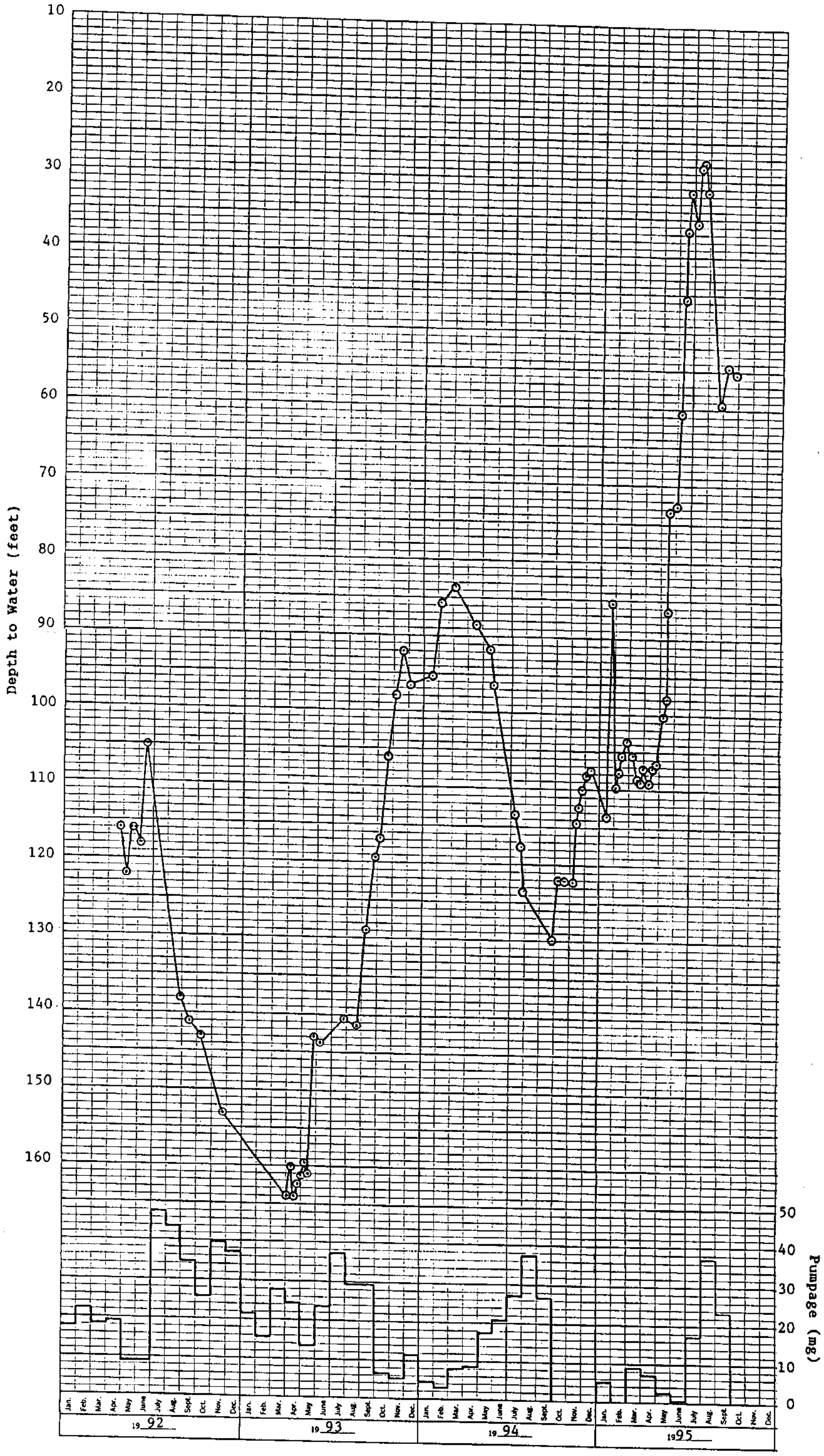
PUMPAGE AND WATER-LEVEL HYDROGRAPHS FOR EARLIER SUPPLY WELLS



WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 1



WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 6



WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 10

APPENDIX C

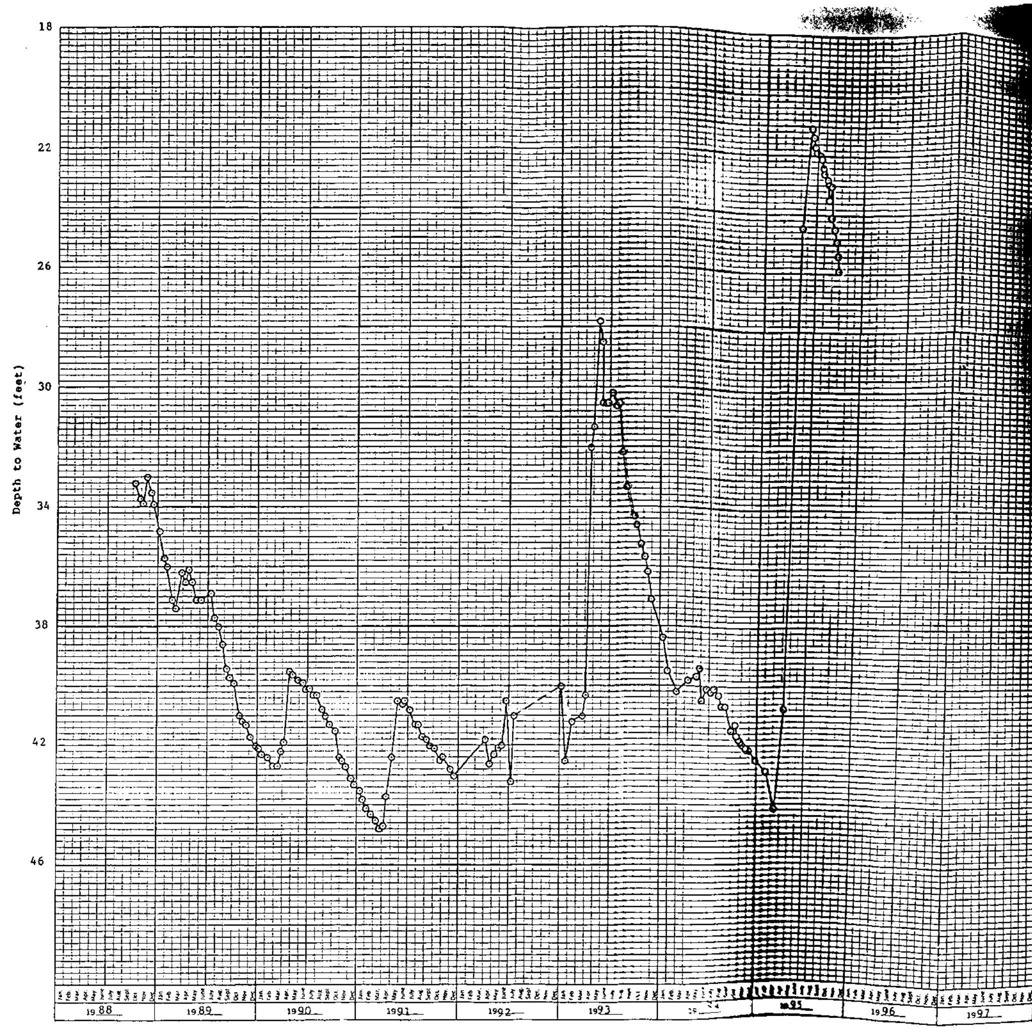
WATER-LEVEL MEASUREMENTS FOR MONITOR WELLS

MAMMOTH COMMUNITY WATER DISTRICT MONITOR WELL LEVEL DATA (OCT/1994-SEP/1995)

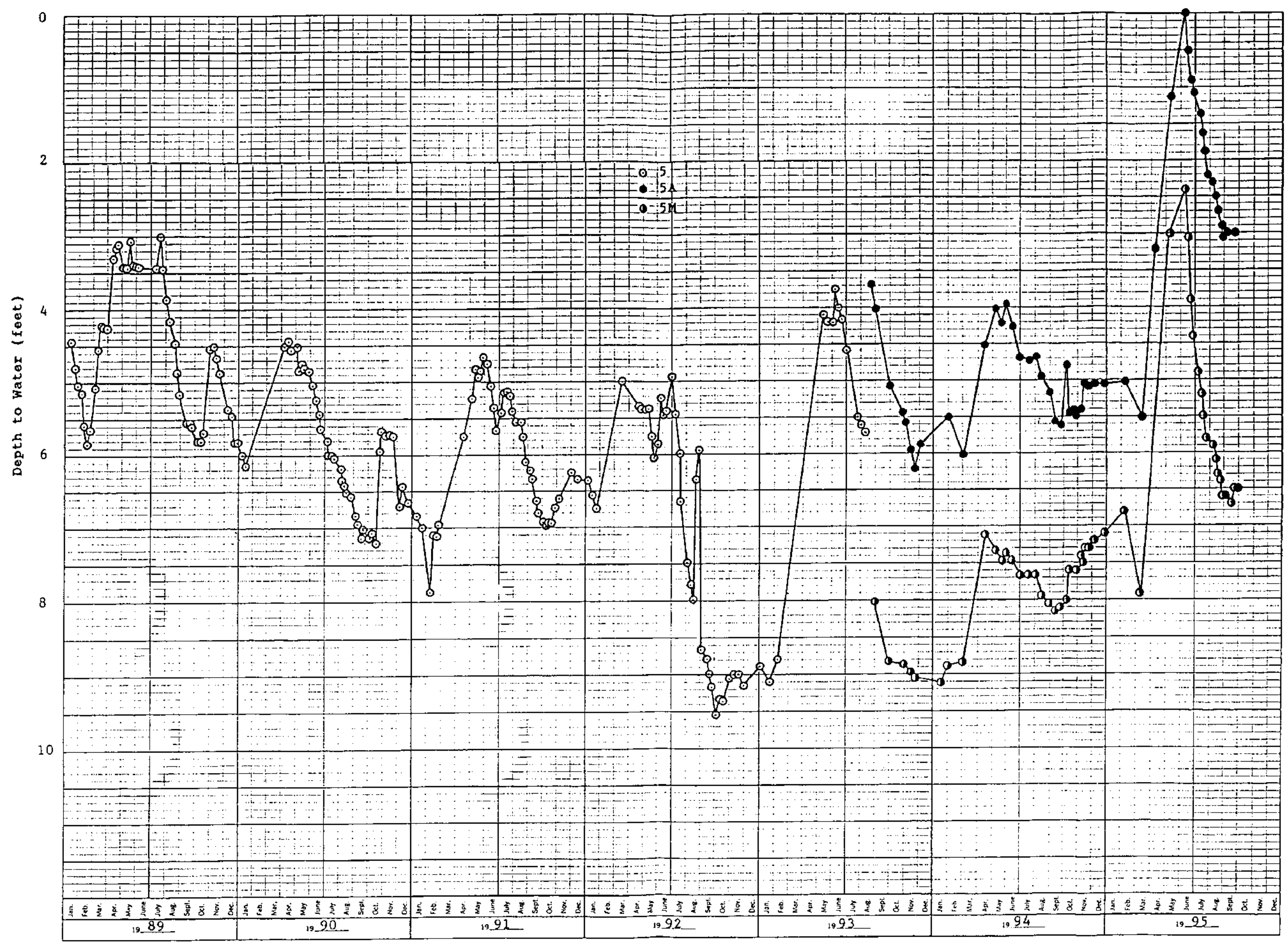
Date	Well 4M	Well 5	Well 5A	Well 5M	Well 7	Well 10M	Well 11	Well 11M	Well 12M	Well 14M	Well 19	Well 21	Well 22	Well 23	Well 24
10/6/94	-41.30		-4.80	-8.00	-270.92	-27.00	-20.75	-33.20	-27.00	-357.80	-342.85	-338.27	-85.00	-10.90	-390.47
10/13/94	-41.71		-5.45	-7.64	-271.18	-27.00	-20.89	-33.65	-27.00	-357.76	-342.90	-337.75	-85.00		-390.65
10/20/94	-41.79		-5.43	-7.55	-271.46	-27.00	-21.21	-34.09	-27.00	-358.28	-343.23	-337.59	-85.00	-11.49	-390.68
10/28/94	-41.85		-5.49	-7.55	-271.79	-27.00	-21.43	-34.53	-27.00	-358.55	-343.18		-85.00	-13.25	-390.77
11/3/94	-42.00		-5.35	-7.42	-272.06	-27.00	-21.54	-34.91	-27.00		-343.21	-341.47	-85.00	-13.03	-390.89
11/9/94	-42.00		-5.14	-7.45	-272.34	-27.00	-21.64	-35.12	-27.00		-343.21	-339.85	-85.00	-13.79	-390.95
11/17/94	-42.09		-5.11	-7.34		-27.00	-21.83	-35.49	-27.00	-358.11	-343.04	-338.67	-85.00	-13.83	-391.04
11/23/94	-42.16		-5.18	-7.31		-27.00				-359.95	-344.51	-339.20	-85.00	-12.78	-390.93
12/1/94	-42.20		-5.09	-7.18	-274.80	-27.00	-22.23	-36.08	-27.00	-358.37	-343.00	-338.00	-85.00	-11.70	-390.97
12/30/94	-42.52		-5.09	-7.05	-277.04	-27.00	-23.26	-36.83	-27.00				-85.00	-15.10	-391.24
2/7/95	-42.89		-5.03	-6.80	-281.99	-27.00	-24.15	-37.40	-27.00		-343.35	-333.53	-85.00	-13.91	-391.36
3/8/95	-44.16		-5.46	-7.86	-285.86	-27.00	-23.85	-38.88	-27.00	-358.04	-343.62	-334.01	-85.00	-13.51	-392.01
4/5/95	-40.77		-3.32		-288.07	-27.00	-25.19	-36.84	-27.00	-359.28	-343.85	-331.73		-10.98	-391.81
5/10/95	-24.49		-1.31	-3.04		-27.00	-25.64	-14.67	-22.73	-359.02	-342.91	-322.14	-85.00	-6.00	-391.42
6/6/95	-21.09		0.00	-2.41	-284.71	-27.00	-16.84	-5.12	-6.65	-344.95	-340.42	-317.29	-80.42	-6.32	-389.97
6/14/95	-21.41		-0.50	-3.06	-272.83	-27.00	-14.32	-4.62	-4.74	-338.35	-339.69	-314.17	-80.42	-6.78	-389.19
6/22/95	-21.71		-0.89	-3.93	-266.48	-27.00	-11.94	-4.58	-4.78	-335.97	-339.61	-311.55	-75.62	-7.53	-388.43
6/28/95	-21.91		-1.08	-4.44	-263.46	-27.00	-10.14	-4.73	-4.77	-334.39	-339.37	-308.67	-74.79	-6.58	-387.76
7/5/95	-21.96		-1.37	-4.88	-260.95	-27.00	-8.45	-4.79	-4.80	-333.02	-339.48	-306.95	-73.08	-7.11	-387.02
7/12/95	-22.12		-1.62	-5.19	-258.68	-27.00	-6.58	-4.81	-4.49	-335.04	-339.18	-303.51	-71.86	-6.79	-386.24
7/19/95	-22.37		-1.88	-5.46	-257.03	-27.00	-4.89	-5.86	-4.73	-334.47	-339.53	-301.67	-71.92	-7.61	-385.57
7/27/95	-22.59		-2.19	-5.76	-255.87	-27.00	-3.09	-7.58	-4.84	-328.89	-338.80	-299.02	-71.57	-7.96	-384.48
8/4/95	-22.84		-2.29	-5.92	-254.93	-27.00	-2.45	-8.78	-4.98	-325.19	-339.26	-296.16	-71.31	-8.10	-383.79
8/9/95	-22.97		-2.51	-6.12	-253.95	-27.00	-2.34	-9.28	-5.19	-320.20		-294.61	-70.79	-8.55	-383.28
8/17/95	-23.47		-2.65	-6.31	-253.13	-27.00	-2.11	-10.71	-5.83	-317.97		-294.18	-70.98	-9.41	
8/26/95	-22.95		-2.87	-6.41	-251.94	-27.00	-1.81	-12.98	-7.44	-313.71	-333.59	-292.59	-72.53	-7.91	-382.56
8/31/95	-24.11		-3.04	-6.59	-251.26	-27.00	-1.56	-14.71	-9.76	-311.79	-333.97	-291.34	-72.94	-10.34	-382.34
9/8/95	-24.49		-2.98	-6.61	-249.22	-27.00	-1.11	-16.17	-13.28	-312.54	-330.69	-289.03	-74.02	-10.79	-382.17
9/14/95	-24.91		-3.04	-6.73	-249.45	-27.00	-0.78	-17.06	-16.17	-313.56		-287.58	-74.92	-11.64	-382.07
9/22/95	-25.43		-3.02	-6.52	-248.47	-27.00	-0.35	-17.98	-17.89	-315.73	-326.11	-287.34	-75.89	-12.61	-381.98
9/29/95	-25.89		-3.05	-6.53	-247.48	-27.00	0.00	-18.82	-19.14	-317.09	-326.40	-285.91	-76.64	-13.21	-382.11
Mean	-31.10		-3.30	-6.17	-264.91	-27.00	-12.75	-20.34	-16.21	-337.70	-339.59	-314.27	-78.82	-10.32	-387.81
Maximum	-44.16		-5.49	-8.00	-288.07	-27.00	-25.64	-38.88	-27.00	-359.95	-344.51	-341.47	-85.00	-15.10	-392.01
Minimum	-21.09		0.00	-2.41	-247.48	-27.00	0.00	-4.58	-4.49	-311.79	-326.11	-285.91	-70.79	-6.00	-381.98

APPENDIX D

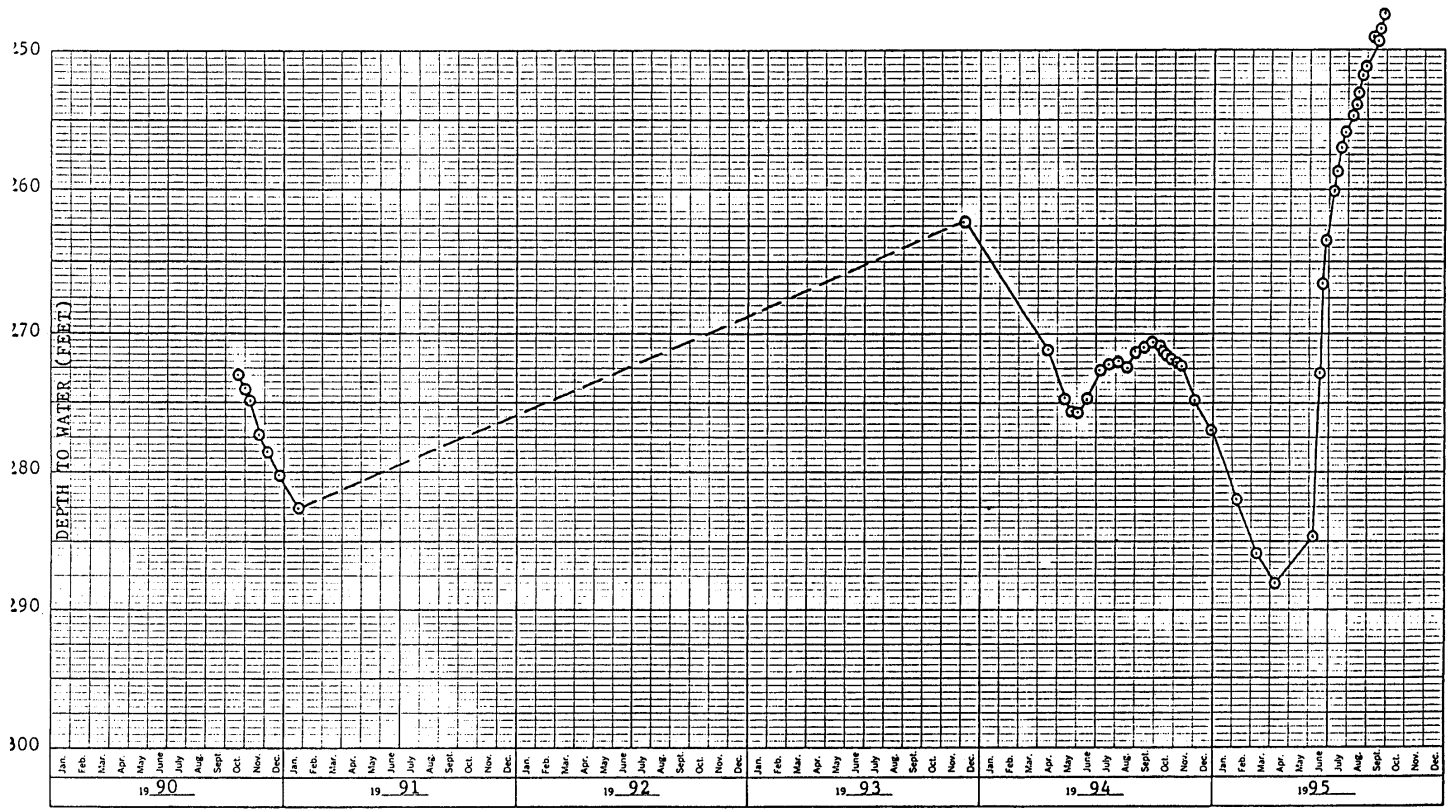
SUPPLEMENTARY WATER-LEVEL HYDROGRAPHS FOR MONITOR WELLS



WATER-LEVEL HYDROGRAPH FOR WELL NO. 4N



WATER-LEVEL HYDROGRAPHS FOR WELLS NO. 5, NO. 5A AND NO. 5M

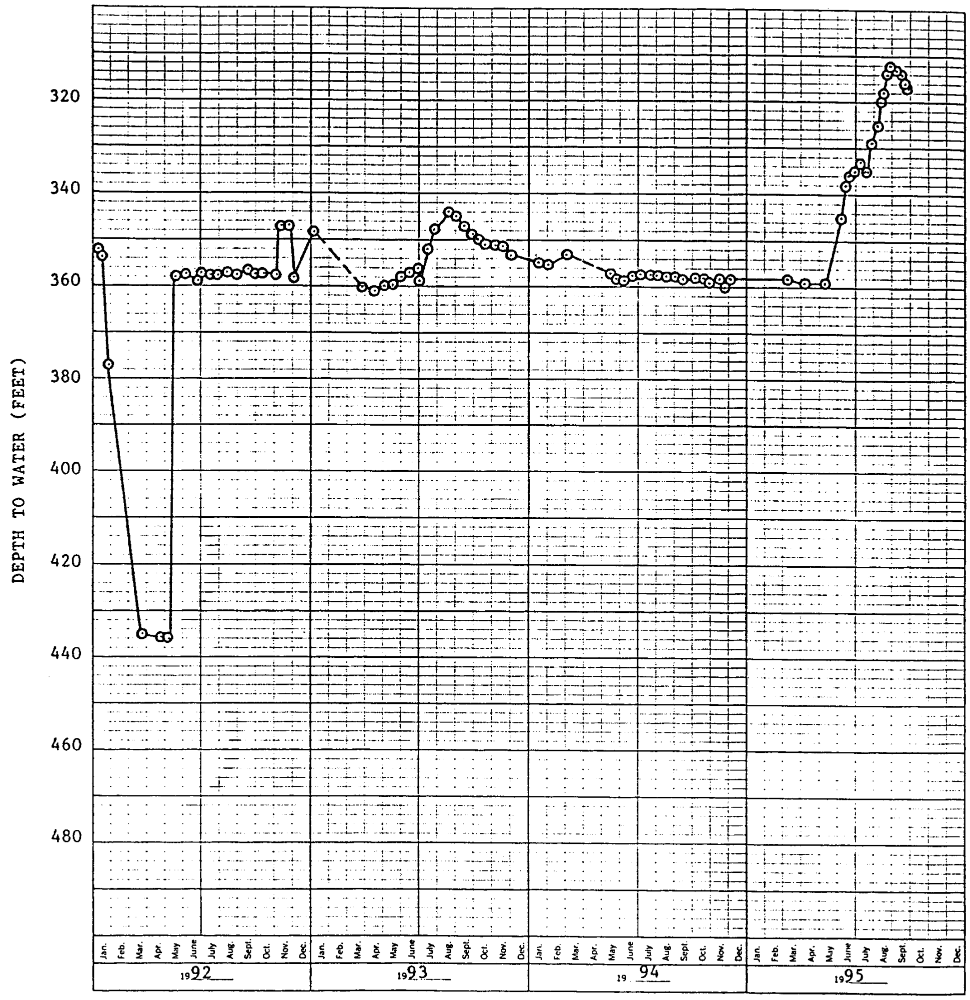


WATER-LEVEL HYDROGRAPH FOR WELL NO. 7

WATER-LEVEL HYDROGRAPH FOR WELL NO. 11

WATER-LEVEL HYDROGRAPH FOR WELL NO. 11M

WATER-LEVEL HYDROGRAPH FOR WELL NO. 12M



WATER-LEVEL HYDROGRAPH FOR WELL NO. 14M

PRODUCTION WELL WATER QUALITY

Well Site	Sample Date	Sample Time	Conductivity umho/cm	TDS mg/L	Temp F	pH
1	7/7/95	11:20	230	165	48.7	7.6
6	7/7/95	10:53	470	330	50.1	7.5
10	7/7/95	10:33	480	325	50.0	7.3
15	6/5/95	10:07	230	150	55.8	7.5
16	6/5/95	9:00	680	435	70.2	7.1
17	7/7/95	11:05	350	270	66.5	7.5
18	6/5/95	9:35	560	330	48.5	7.1
20	6/5/95	9:15	210	160	59.6	7.0

APPENDIX E

CHEMICAL ANALYSES OF WATER FROM DISTRICT WELLS

PRODUCTION WELL WATER QUALITY

Well Site	Sample Date	Sample Time	Conductivity umho/cm	TDS mg/L	Temp F	pH
1	7/7/95	11:20	230	165	48.7	7.6
6	7/7/95	10:53	470	330	50.1	7.5
10	7/7/95	10:33	480	325	50.0	7.3
15	6/5/95	10:07	230	150	55.8	7.5
16	6/5/95	9:00	680	435	70.2	7.1
17	7/7/95	11:05	350	270	66.5	7.5
18	6/5/95	9:35	560	330	48.5	7.1
20	6/5/95	9:15	210	160	59.6	7.0

MONITOR WELL WATER QUALITY

Well Site	Sample Date	Sample Time	Conductivity umho/cm	TDS mg/L	Temp F	pH
4M	10/12/95	8:15	158	79	46	7.4
5A	9/18/95	14:20	680	341	61	6.7
5M	9/18/95	14:30	425	213	57	6.3
7	No sample					
10M	9/27/95	14:00	No water in well			
11	9/27/95	14:08	92	46	53	7.5
11M	9/27/95	14:25	298	149	53	7.5
12M	9/27/95	14:32	277	138	52	7.6
14M	11/7/95	14:00	240	120	50	7.0
19	11/8/95	11:30	160	80	50	7.4
21	11/7/95	10:30	140	70	52	7.8
22	No sample					
23	9/18/95	15:06	93	47	54	7.3
24	11/7/95	16:00	140	70	57	7.4

APPENDIX F

MAMMOTH CREEK STREAMFLOW

MAMMOTH CREEK FLOW AT OLD MAMMOTH ROAD

DAILY DISCHARGE IN CUBIC FEET PER SECOND

DAY	1994 OCT	NOV	DEC	1995 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	5.8	8.4	7.3	8.4	8.4	12.3	54.3	86.7	210.6	101.4	27.5
2	6.8	6.3	8.0	7.1	9.2	8.4	12.3	47.0	119.4	203.3	91.3	31.0
3	6.8	6.1	7.8	7.4	8.8	8.8	12.3	34.6	138.6	202.3	83.7	30.0
4	6.8	6.1	8.0	7.3	8.8	7.4	13.0	32.0	140.4	172.1	86.7	31.0
5	8.6	6.7	8.2	5.4	8.8	9.9	13.9	30.0	146.7	175.1	83.0	30.0
6	9.2	12.5	7.8	9.2	8.8	9.0	14.9	27.0	154.1	191.0	78.7	29.0
7	8.3	9.2	7.8	10.7	8.6	8.6	15.1	24.6	141.3	209.5	86.0	26.1
8	7.9	7.6	6.3	13.2	8.8	8.6	15.3	25.1	111.9	220.1	80.8	22.8
9	7.3	7.4	7.6	11.4	8.6	10.3	13.7	27.5	98.2	215.9	68.8	21.0
10	6.8	7.4	7.8	7.6	8.4	13.9	13.7	28.5	88.2	227.6	56.9	21.9
11	6.8	7.6	8.4	8.4	8.4	12.3	13.9	32.5	91.3	228.7	47.6	21.9
12	5.9	7.8	7.8	10.3	8.4	15.3	15.1	36.2	94.3	210.6	52.4	21.5
13	6.2	7.4	7.6	12.7	8.2	14.1	17.1	32.0	115.2	167.3	60.1	20.2
14	6.2	6.1	8.6	12.5	7.1	14.1	15.3	29.0	148.5	131.5	60.1	21.0
15	6.2	6.9	7.8	12.5	8.4	14.6	13.9	27.0	169.2	122.0	51.8	20.2
16	5.9	7.4	8.0	10.1	9.4	13.4	13.4	26.1	155.0	111.1	42.9	20.2
17	5.8	5.4	7.6	10.1	8.8	12.7	13.0	27.0	135.9	117.8	32.5	18.9
18	6.3	7.1	7.6	10.1	8.4	12.5	12.5	32.5	104.6	121.1	37.3	17.6
19	6.5	8.8	7.4	10.1	8.2	17.1	12.5	37.3	92.0	119.4	51.2	18.0
20	6.2	10.3	7.4	10.7	8.4	13.2	11.4	39.5	88.2	126.3	50.6	18.5
21	6.1	10.3	7.4	10.5	8.4	13.9	11.8	48.2	83.7	128.0	45.8	18.5
22	6.3	9.2	7.4	10.5	8.4	13.7	11.6	55.6	86.7	131.5	33.6	18.9
23	6.1	8.4	7.3	10.5	8.6	15.1	11.8	55.6	92.0	129.7	51.8	18.9
24	6.0	7.1	7.3	12.1	8.6	14.4	13.7	68.8	108.6	119.4	71.6	18.5
25	6.1	6.5	8.2	13.9	8.6	14.6	15.6	80.8	136.8	106.2	46.4	18.0
26	6.0	7.4	7.6		8.6	15.8	17.3	69.5	167.3	92.8	37.3	18.0
27	6.0	10.7	7.4	12.5	8.6	17.3	19.2	71.6	177.0	85.2	40.1	16.0
28	5.8	9.7	7.3	13.4	8.4	15.8	20.0	62.7	193.8	95.1	40.6	14.1
29	5.4	8.0	7.4	9.9		13.2	23.7	57.5	205.4	107.0	37.3	14.1
30	5.4	7.8	6.5	8.4		11.8	47.0	62.0	215.9	128.0	29.5	14.1
31	5.6		7.6	8.4		11.8		69.5		122.0	27.0	
AVG	6.5	7.8	7.7	10.1	8.6	12.6	15.5	43.6	129.6	152.5	56.9	21.2
MAX	9.2	12.5	8.6	13.9	9.4	17.3	47.0	80.8	215.9	228.7	101.4	31.0
MIN	5.4	5.4	6.3	5.4	7.1	7.4	11.4	24.6	83.7	85.2	27.0	14.1

APPENDIX G

VALENTINE RESERVE SPRINGFLOW

Valentine Reserve Spring Flow	
North Spring - 1995	
	24 hr Avg.
Date	Discharge (gpm)
4-Jun	118
5-Jun	123
6-Jun	129
7-Jun	
8-Jun	
9-Jun	87
10-Jun	88
11-Jun	95
12-Jun	
13-Jun	81.7
14-Jun	78.5
15-Jun	77.3
16-Jun	74
17-Jun	69.4
18-Jun	65.7
19-Jun	66.2
20-Jun	64.4
21-Jun	64.9
22-Jun	62.6
23-Jun	61.2
24-Jun	60.3
25-Jun	
26-Jun	57.9
27-Jun	55.2
28-Jun	53.7
29-Jun	52.5
30-Jun	
1-Jul	46.9
2-Jul	45.9
3-Jul	45.6
4-Jul	44.9
5-Jul	44.1
6-Jul	43.3
7-Jul	42.6
8-Jul	41.7
9-Jul	41.3
10-Jul	40.6
11-Jul	39.7
12-Jul	38.7
13-Jul	38.1
14-Jul	37.1
15-Jul	36.0
16-Jul	34.4

17-Jul	33.3
18-Jul	33.1
19-Jul	32.7
20-Jul	32.4
21-Jul	31.7
22-Jul	31.2
23-Jul	30.9
24-Jul	30.7
25-Jul	30.2
26-Jul	29.8
27-Jul	29.9
28-Jul	30.1
29-Jul	30.2
30-Jul	31.5
31-Jul	31.6
1-Aug	31.8
2-Aug	32.3
3-Aug	33.4
4-Aug	34.4
5-Aug	36.0
6-Aug	36.8
7-Aug	38.2
8-Aug	39.7
9-Aug	41.8
10-Aug	44.4
11-Aug	45.8
12-Aug	47.0
13-Aug	48.0
14-Aug	48.3
15-Aug	48.4
16-Aug	48.5
17-Aug	48.4
18-Aug	48.5
19-Aug	48.5
20-Aug	48.9
21-Aug	48.8
22-Aug	48.9
23-Aug	48.6
24-Aug	48.7
25-Aug	48.6
26-Aug	48.3
27-Aug	48.5
28-Aug	48.3
29-Aug	47.7
29-Aug	48.4
30-Aug	48.3
31-Aug	48.1
1-Sep	46.7
2-Sep	45.1

3-Sep	44.8
4-Sep	44.9
5-Sep	44.7
6-Sep	44.7
7-Sep	44.8
8-Sep	44.9
9-Sep	44.9
10-Sep	44.8
11-Sep	44.8
12-Sep	44.9
13-Sep	44.8
14-Sep	44.9
15-Sep	45.1
16-Sep	44.9
17-Sep	44.5
18-Sep	
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19-Oct	
20-Oct	
21-Oct	

22-Oct	
23-Oct	
24-Oct	43.8

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
600 WEST SHAW, SUITE 250
FRESNO, CALIFORNIA 93704
TELEPHONE (209) 224-4412

December 11, 1995

Mr. Dennis Erdman, General Manager
Mammoth Community Water District
P.O. Box 597
Mammoth Lakes, CA 93546

Re: Annual Report on Groundwater Monitoring

Dear Dennis:

Submitted herewith is our annual report on the results of the District groundwater monitoring program for the period October 1994-September 1995. I appreciate the cooperation of District personnel in conducting this monitoring and providing data tabulations.

Sincerely yours,

Kenneth D. Schmidt

KDS/pt

cc: Steve Kronick