ANNUAL REPORT ON RESULTS OF MAMMOTH COUNTY WATER DISTRICT GROUNDWATER MONITORING PROGRAM FOR OCTOBER 1993-SEPTEMBER 1994

Prepared for
Mammoth County Water District
Mammoth Lakes, California

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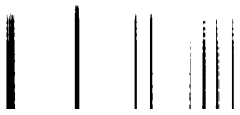

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INTRODUCTION

In Summer 1992, the Mammoth County Water District contracted for the drilling of five new water-supply wells in Mammoth Lakes. Pumping of one of these (Well No. 15) began 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 monitoring program) were to be included in this

evaluation. This report comprises the second annual report pursuant to the settlement agreement. The first report was prepared by Kenneth D. Schmidt and Associates on December 13, 1993.

SUMMARY AND CONCLUSIONS

The District pumped 1,298 acre-feet of water from five supply wells during the 1994 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 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 some shallow wells tapping the uppermost glacial till strata rose during 1994, during and following some runoff in the watershed. However, this rise was substantially less than in 1993, when there was more streamflow than in 1994. Groundwater is generally present in the uppermost strata only in the westerly part of the area, in the meadow and near Mammoth Creek. Except for three wells, water levels in the monitor wells tapping the underlying consolidated rock generally stayed the same or slightly rose during the 1994 water year. Water levels in three wells (17, 19, and 24) continued to decline due to drought conditions. A water-level elevation contour map was prepared for September 1994. This map indicates that the extent of the cone of depression due to pumping of District wells was limited in size, and did not extend beyond the well field.

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

The results of the 1993-94 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 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.

MODIFICATIONS FOR DISTRICT SUPPLY WELLS

During May-June, 1994, Johnson Drilling, Inc. of Reedley modified four of the District supply wells. These modifications were necessary to 1) provide the required annular seals for public supply wells, and 2) provide additional casing to protect the permanent pumps from hole collapse.

Well No. 16 was modified by installing a 12 3/4-inch diameter steel casing, from 715 feet in depth up to the land surface. The casing was perforated from 420 to 470 feet and 500 to 680 feet in depth, opposite the major water-producing zones. Gravel was placed from 60 to 156 feet in depth and cement from 60 feet to the land surface on the outside of the 12 3/4-inch diameter casing. Well No. 17 was modified by placing gravel from 60 to 88 feet in depth and cement from 60 feet to the land surface on the outside of the existing 12 3/4-inch diameter casing. Well No. 18 was modified by removing the temporary conductor casing, and then a 16-inch

diameter hole was drilled to a depth of 147 feet. A 16-inch diameter steel conductor casing was then placed to a depth of 47 feet. A 12 3/4-inch steel casing was installed from 480 feet in depth to the land surface. Gravel was placed from 60 to 480 feet in depth and cement from 0 to 60 feet on the outside of the 12 3/4-inch casing. For Well No. 20, a 15 1/2-inch diameter unperforated steel casing was placed from a depth of 147 feet to the land surface, and a 12 3/4-inch diameter unperforated steel casing from 420 feet to the land surface. Cement was placed from 0 to 60 feet in depth on the outside of the 12 3/4-inch casing. Copies of the well completion reports for these wells are provided in Appendix A.

WELL CONSTRUCTION DATA

Figure 1 shows locations of District wells, a subsurface geologic cross section, 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 operation the longest. Wells No. 6 and 10 have been in service since 1988. 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. None of the other District wells are in service. Wells No. 2, 3, 4, 5, and 7 (shown in Figure 1) were not put in service because of low well yields.

Table 2 summarizes construction data for District monitor wells. Five of these wells (No. 5A, 14M, 19, 21, and 24) are deep

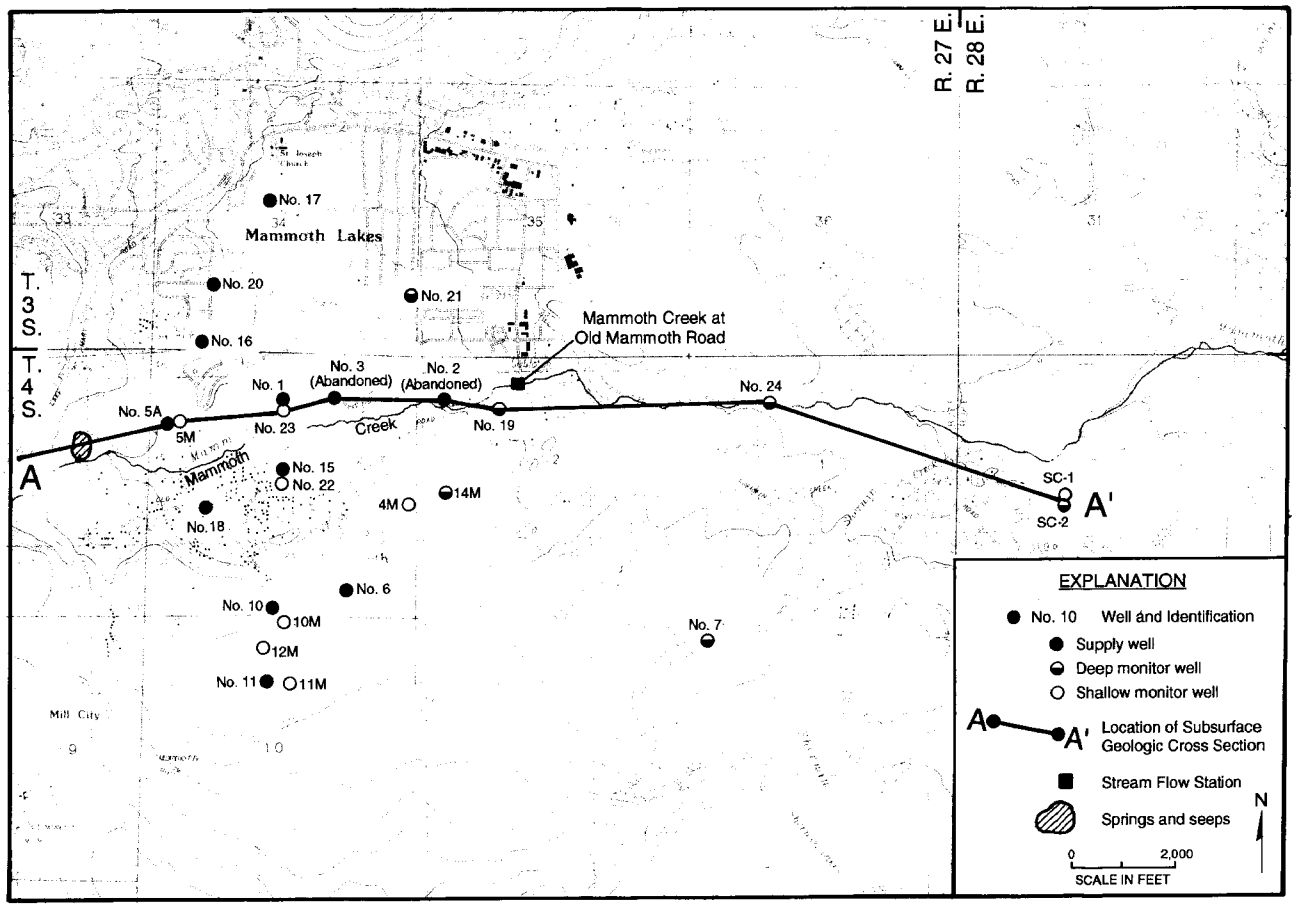


FIGURE 1 - LOCATION OF WELLS AND SUBSURFACE GEOLOGIC CROSS SECTION A-A'

TABLE 1 - CONSTRUCTION DATA FOR DISTRICT SUPPLY WELLS

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

Wells No. 16, 17, 18, and 20 were modified in June 1994 in preparation for being put into service.

TABLE 2 - CONSTRUCTION DATA FOR DISTRICT MONITOR WELLS

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

Well No. 5 was modified in August 1983, so as to be sealed off opposite the glacial till and be perforated only opposite the volcanic rock, and re-designated Well No. 5A.

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. 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 below 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 only been found in the uppermost glacial till layer 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 most 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 layers. At Well No. 24, water was not found in the upper part of the basalt or either of the till layers. Water in this well is in a fractured scoria layer. The lost circulation zone just above the water level in this well may prevent the water level from being shallower, if a thief zone is present. In September 1994, there was a fairly uniform water-level slope from Well No. 23 to No. 19

Figure 2 -

Subsurface Geologic Cross Section A-A'

(In Pocket)

to No. 24. The water-level in Well No. 24 coincided well with that in SC-2 farther east, and indicated a relatively flat water-level slope between these two wells.

DISTRICT PUMPAGE

Pumpage records for District wells are provided in Appendix B. Table 3 shows monthly pumpage from District Wells during the 1994 water year. The total pumpage was 1,298 acre-feet, or 57 percent of that for the previous water year. Of this, 165 acre-feet were from Well No. 1, 799 acre-feet were from Wells No. 6 and 10, and 336 acre-feet were from Wells No. 15 and 18.

WATER LEVELS

Pumped Wells

Water-level measurements (static and pumping) for District supply wells that are in service are provided in Appendix B. Water-level hydrographs for Wells No. 1, 6, and 10 are provided in Appendix C. Figure 3 shows 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 normally ranged from about 260 to 280 feet during periods when the well was being pumped. The water-level in this well recovered during October 1993-May 1994, during which time it was not pumped much. The water level in early June 1994 was 234 feet. Heavy pumping of the well began in July 1994.

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

Month	No. 1	No. 6	No. 10	No. 15	No. 18	Total (Rounded)
Oct 93	5.8	19.8	20.3	0.0	0.0	46
Nov	0.0	0.1	1.4	0.0	0.0	2
Dec	0.0	3.3	20.4	0.0	0.0	24
Jan 94	2.7	24.4	44.0	0.0	0.0	71
Feb	4.8	0.0	0.0	0.0	0.0	5
Mar	9.3	11.4	9.5	0.0	0.0	30
Apr	26.4	17.4	38.8	0.0	0.0	83
May	31.8	35.9	50.7	0.3	0.0	119
June	30.9	41.6	78.4	0.2	0.0	151
July	18.8	48.2	73.0	113.7	0.0	254
Aug	28.8	54.0	128.0	106.1	0.0	317
Sept	5.3	0.0	78.1	100.2	14.5	198
Total (Rounded)	165	256	543	321	15	1,298

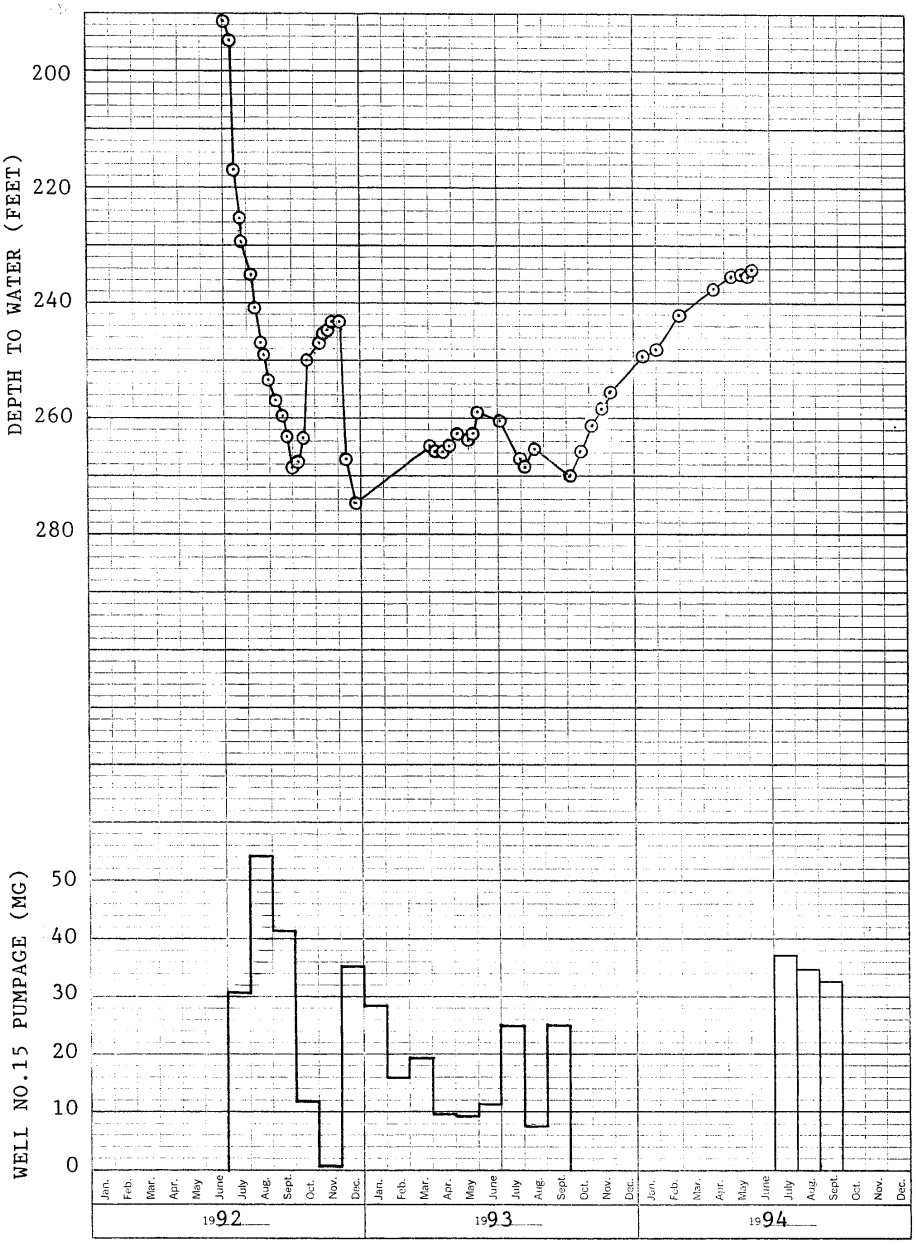


FIGURE 3 - WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 15

Figure 4 shows water levels and pumpage for Well No. 18. The overall trend for this well prior to commencement of pumping in September 1994 was a slight water-level rise.

The static water level in Well No. 1 has ranged from about 220 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 about 60 feet during low pumping periods (early 1994) 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 85 feet during low pumping periods (March 1994) to more than 160 feet during heavy pumping periods (Summer 1993). This well was used less during the 1994 water year than the previous year, and the lowest water level was 130 feet near the end of September 1994.

Deep Non-Pumped Wells

Water-level measurements for monitor wells and non-active District supply wells are provided in Appendix D. Trends for Well No. 5A indicated depth to water has ranged from about 4 to 6 feet. The water level records for Well No. 14M indicate depth to water normally ranged from about 350 to 360 during the 1994 water year, with no significant change during the period. Water-level hydrographs for these wells are provided in Appendix E.

The water level in Well No. 16 (Figure 5) normally ranged from 453 to 460 feet deep, prior to the modification of the well in June 1994. After the modification, the water level was about 30 feet

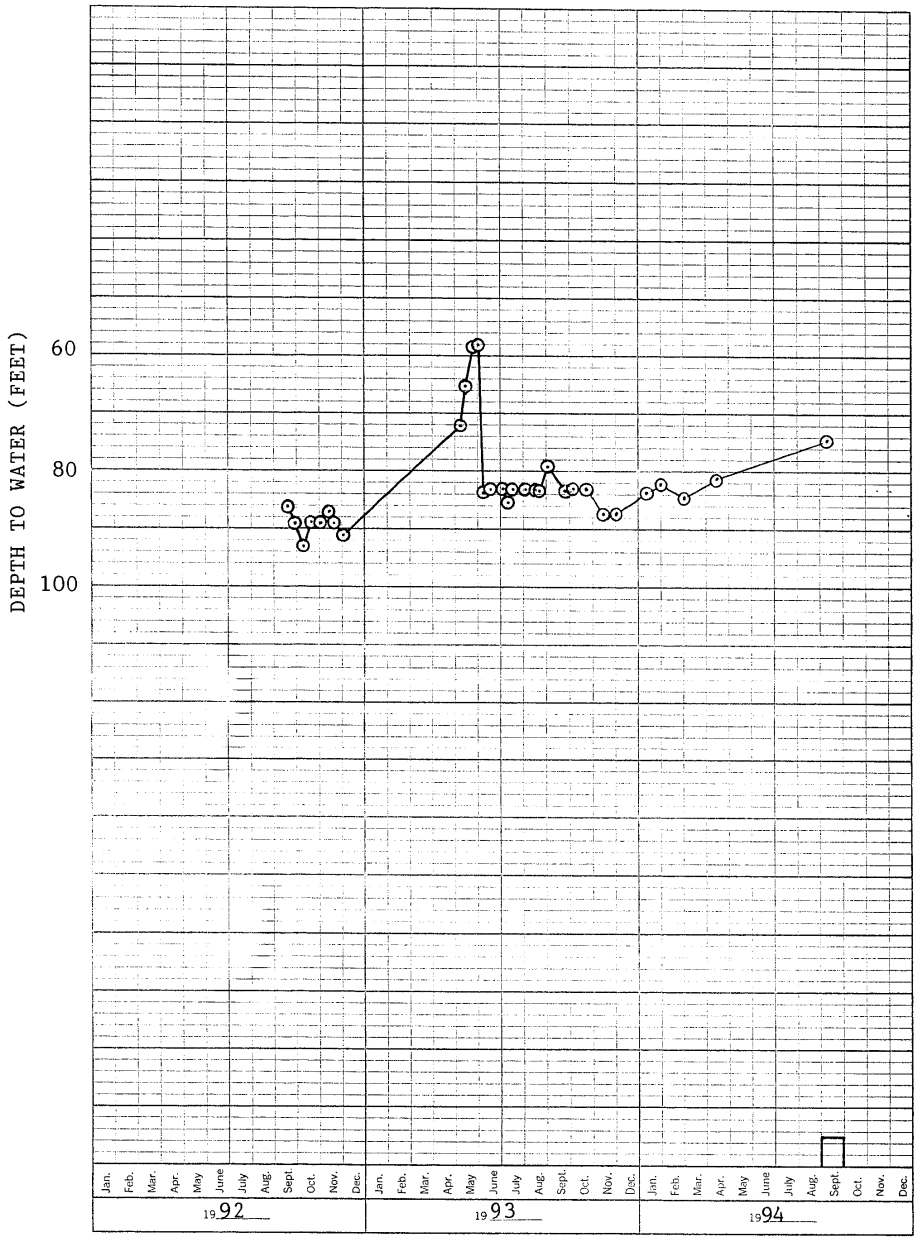


FIGURE 4 - WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR WELL NO. 18

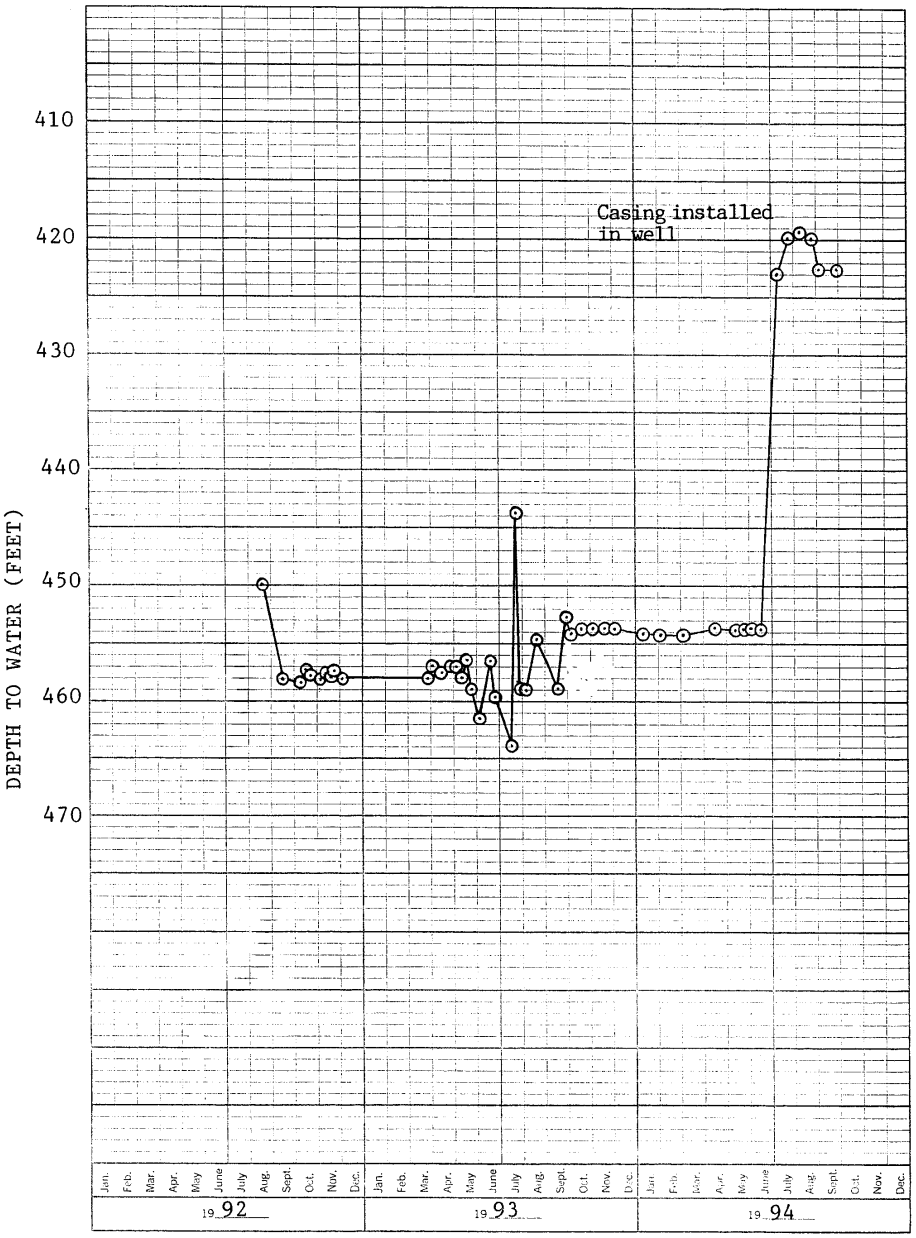


FIGURE 5 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 16

shallower than before, and ranged from 420 to 423 feet, even though the elevation of the measuring point did not change. Overall, the trend in this well is a constancy of water level. The water level in Well No. 17 (Figure 6) has ranged from about 376 to 384 feet deep, and has fallen about eight feet during the period of record (about two years). The water level in Well No. 19 (Figure 7) has normally ranged from about 333 to 343 feet deep and has fallen about eight feet during the period of record. The water level in this well could not be routinely measured until June 1993. The water level in Well No. 20 (Figure 8) has ranged from about 410 to 414 feet deep and has not significantly changed during the period of record. The water level in Well No. 21 (Figure 9) has ranged from about 340 to 370 feet in depth. The water level in this well has risen about 30 feet during the period of record (about two years). Figure 10 is a water-level hydrograph for Well No. 24. Measurements for this well began in Summer 1993. Depth to water has ranged from about 385 to 390 feet, and the water level has fallen five feet during the period of record of slightly more than a year.

Water levels in Wells No. 17, 19, and 24 have fallen during the period of record and did not rise significantly due to recharge in 1993. These three wells are not located close to District supply wells (No. 1, 6, 10, and 15) that were pumped during the past two years. Such water-level declines did not occur in deep wells (i.e., No. 16, 18, 20, and 14M) closer to the pumped wells. If pumpage was responsible for the water-level declines in these

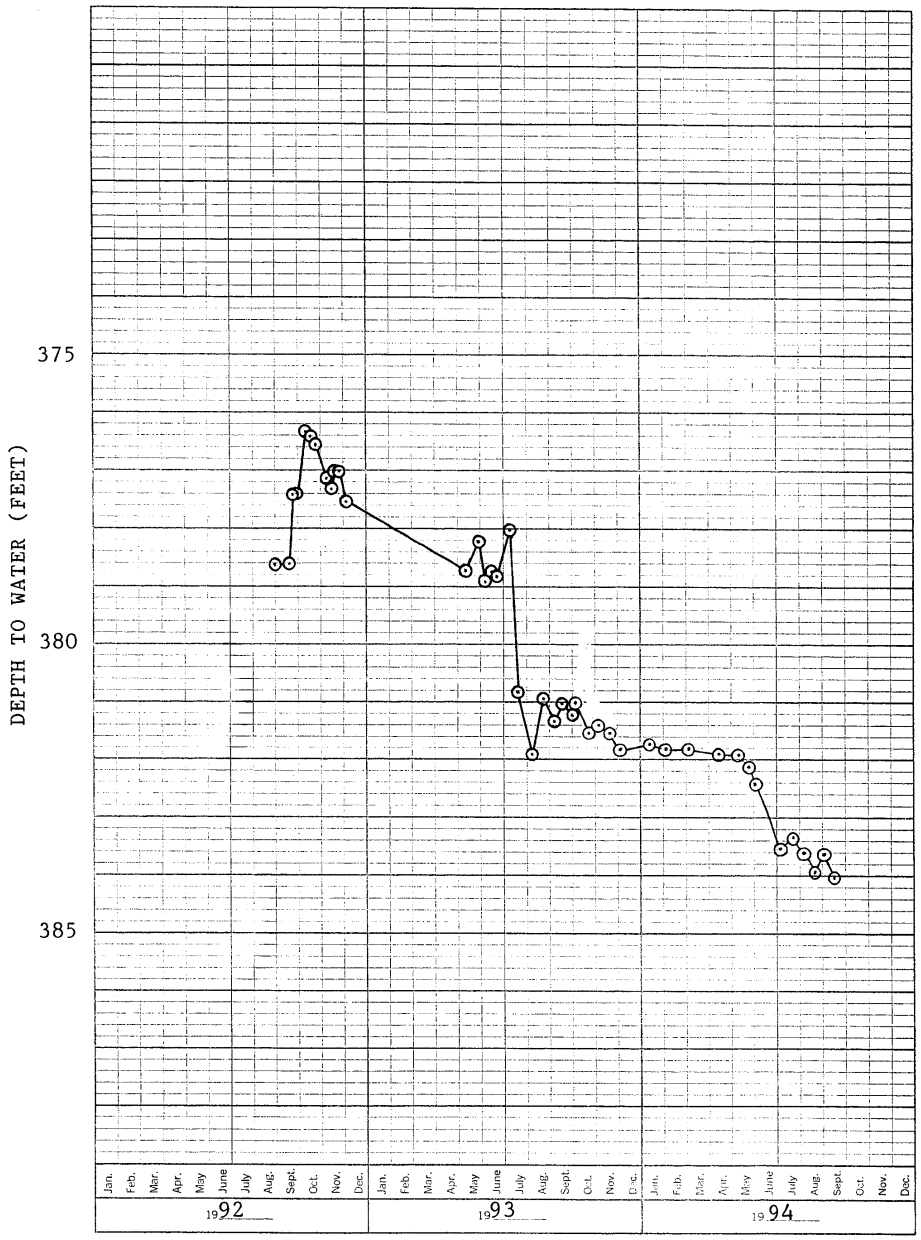


FIGURE 6 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 17

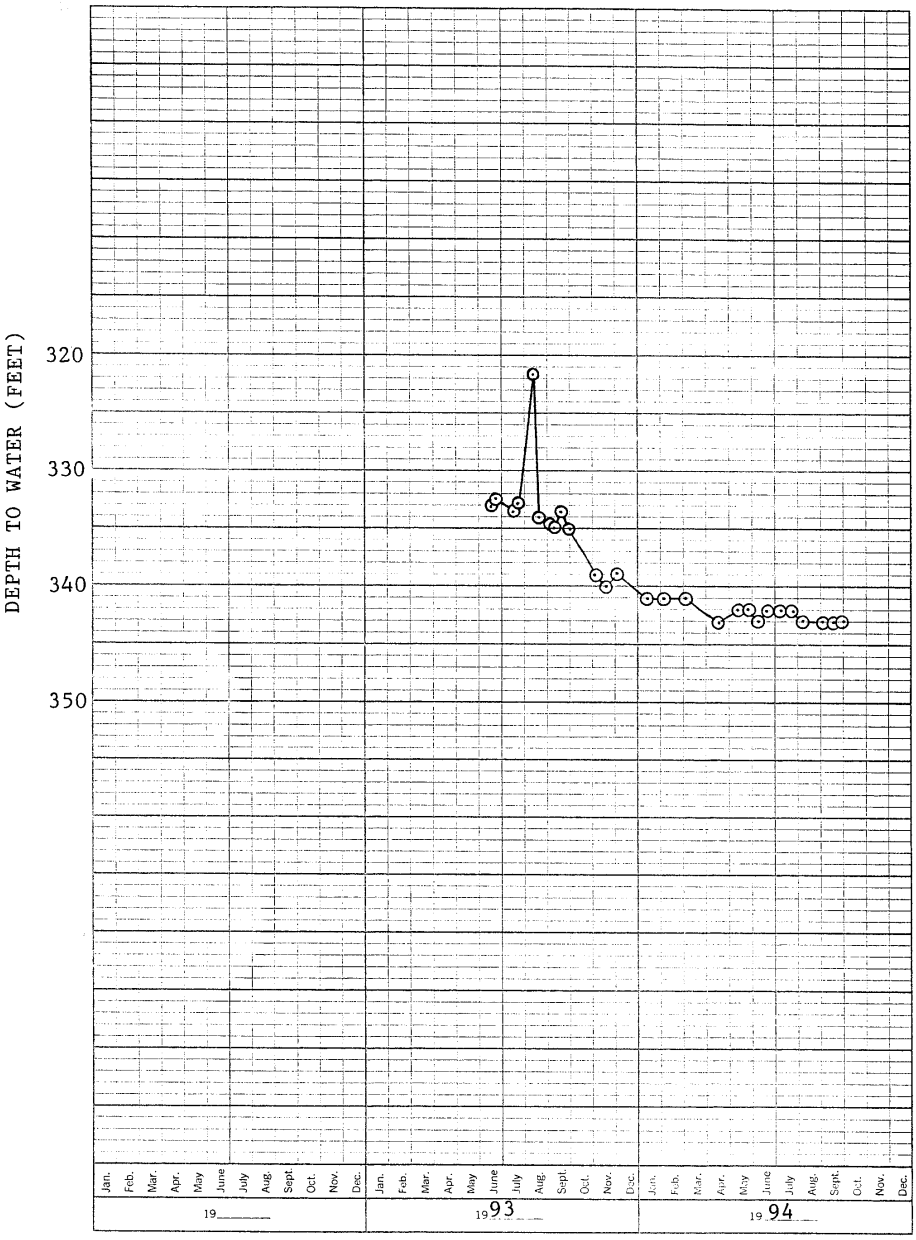


FIGURE 7 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 19

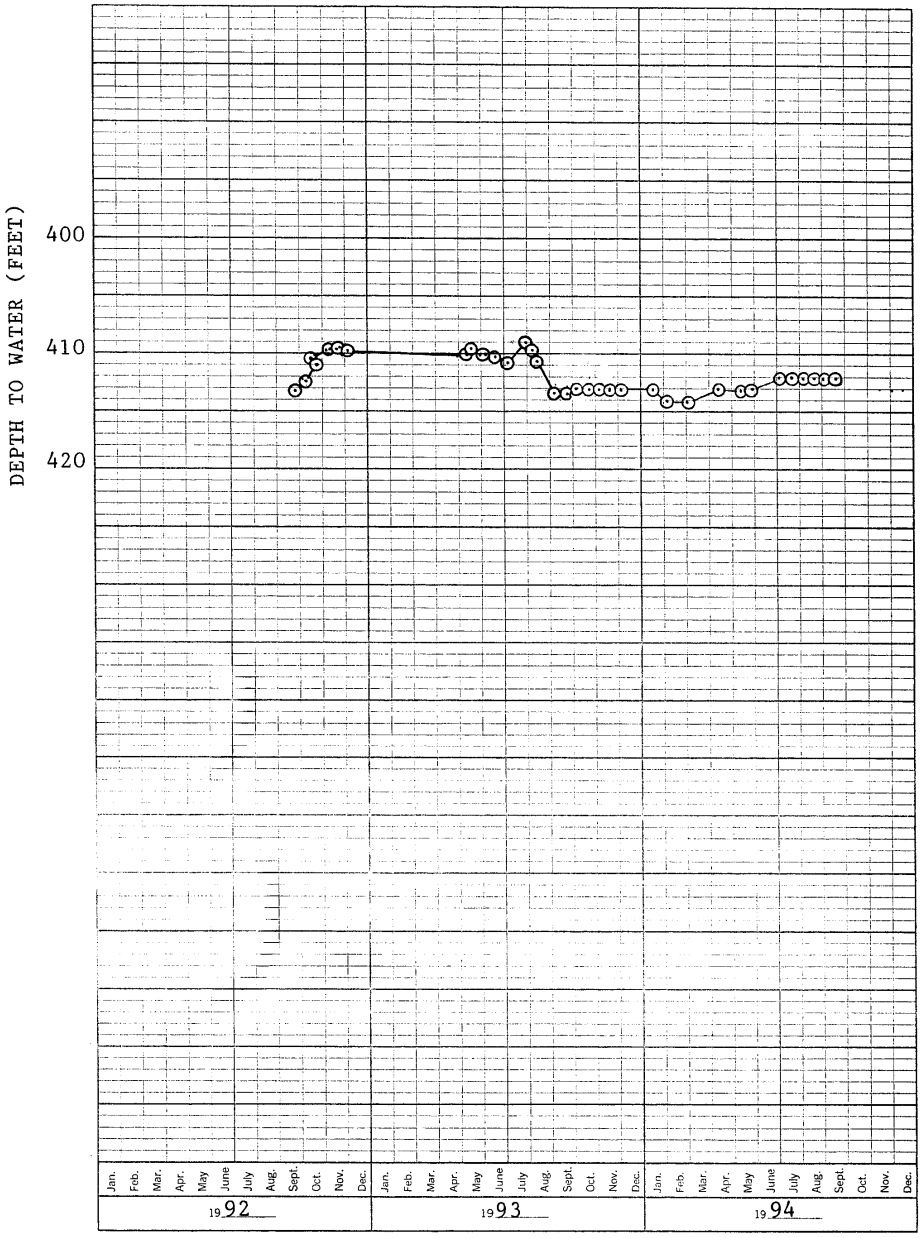


FIGURE 8 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 20

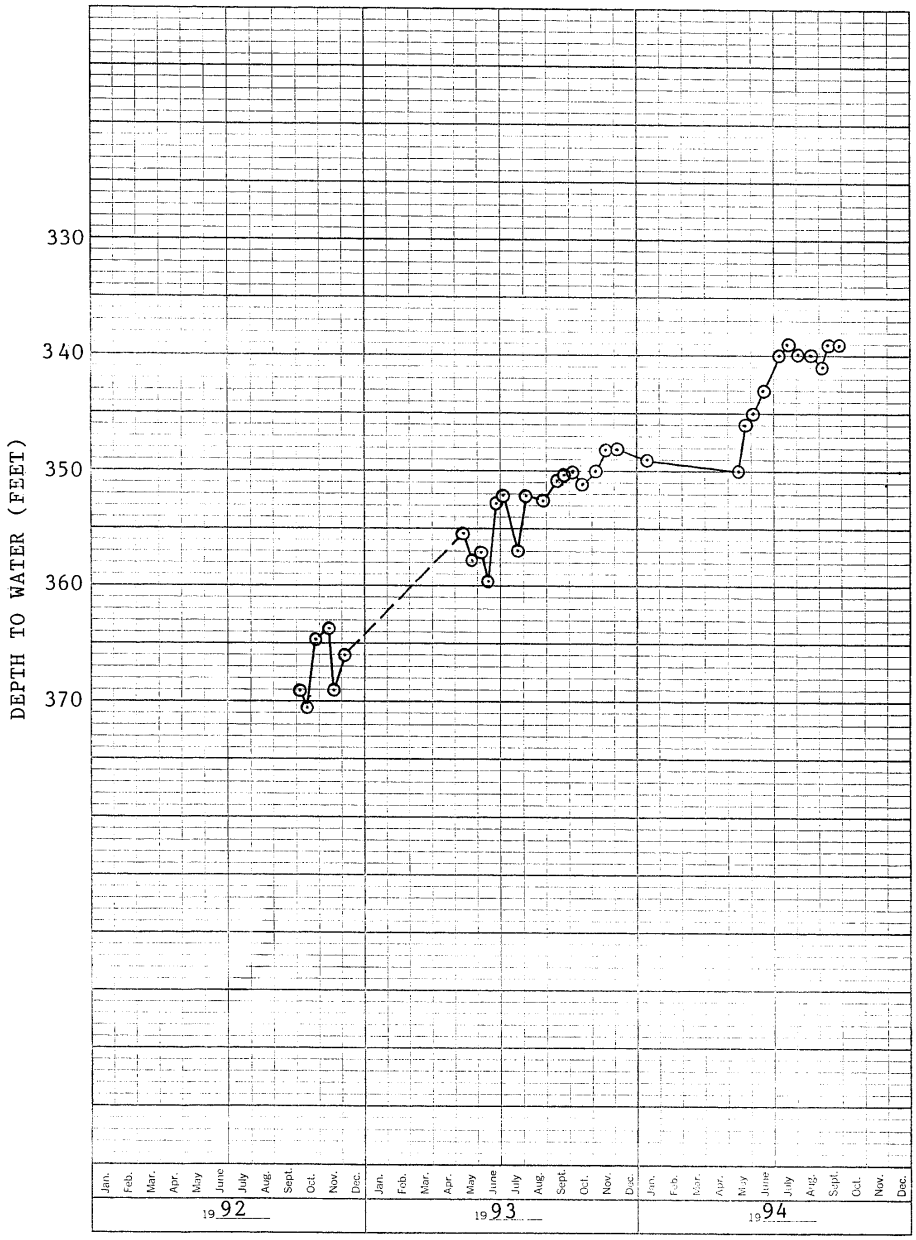


FIGURE 9 - WATER-LEVEL HYDROGRAPH FOR DISTRICT WELL NO. 21

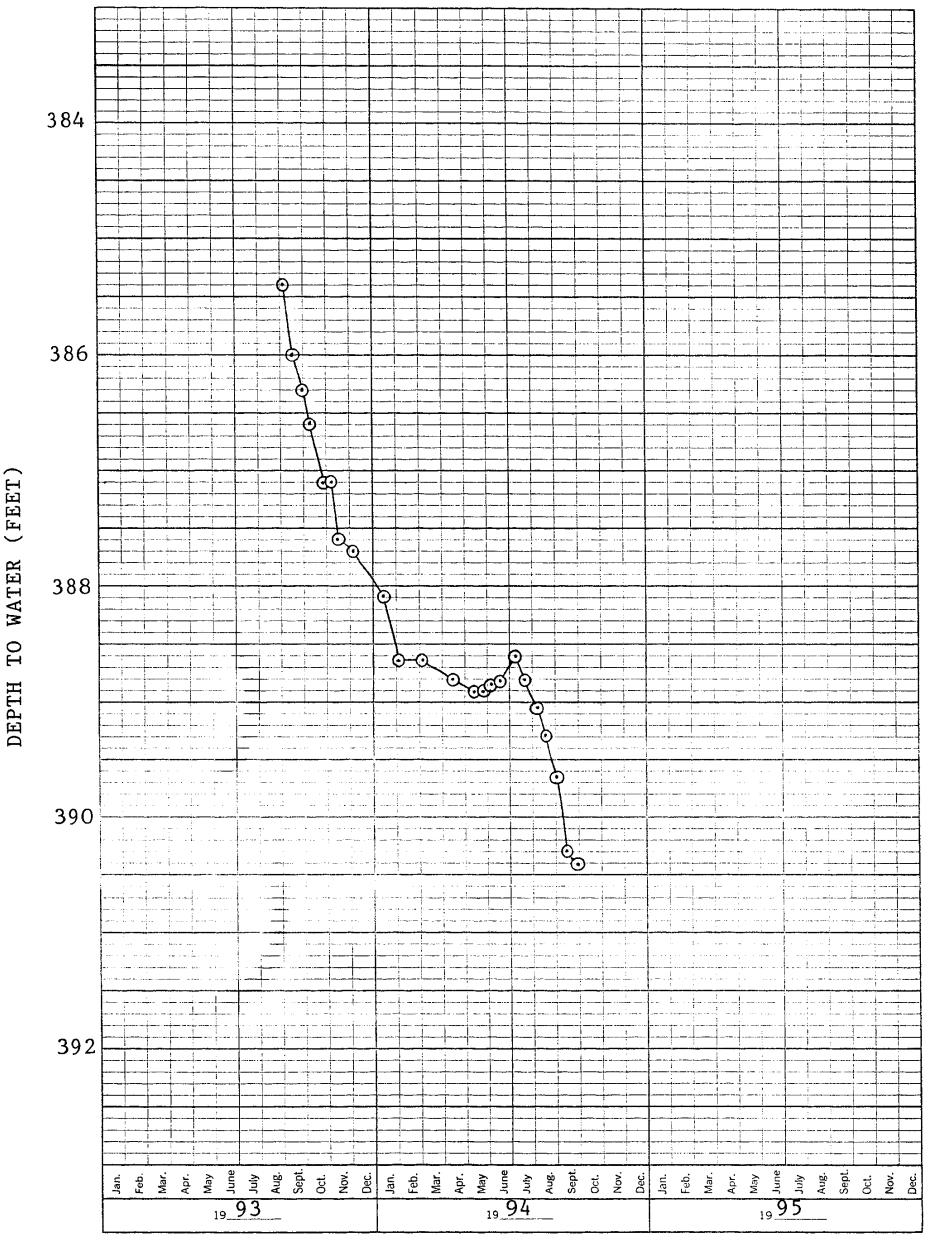


FIGURE 10 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 24

wells, there would have been greater declines in the wells closer to the pumped wells, which was not the case. The best explanation for these declines is due to the relation between recharge and downward flow of groundwater. In the absence of pumpage, water levels in these wells would rise during and/or following wet periods, due to recharge. Because of the depth of the water-producing fractures in some wells, the rise may take several years or longer to occur. In contrast, during dry periods, water levels would be expected to temporarily fall, if the amount of downward flow is greater than recharge. Thus subsurface geologic conditions at Wells No. 17, 19, and 24 probably are more conducive to a delayed response to recharge and downward flow of groundwater than elsewhere. In contrast, the water-level rise in Well No. 21 could be due to a lack of downward groundwater flow, combined with a relatively rapid response to the 1993 recharge, at this well.

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 was relatively stable during 1993-94. During May-June, 1994 the water level rose due to recharge, but the rise was less than that observed in 1993. Examination of Figure 11 indicates that there has been very little overall change in water level in this well during 1992-94.

Figure 12 is a water-level hydrograph for SC-2, which taps groundwater in deeper basalt near SC-1. The water level in this well also remained relatively stable during 1994. The water level rose slightly in May-June, 1994 due to recharge. Comparison of the hydrographs for SC-1 and SC-2 indicates that water levels in the

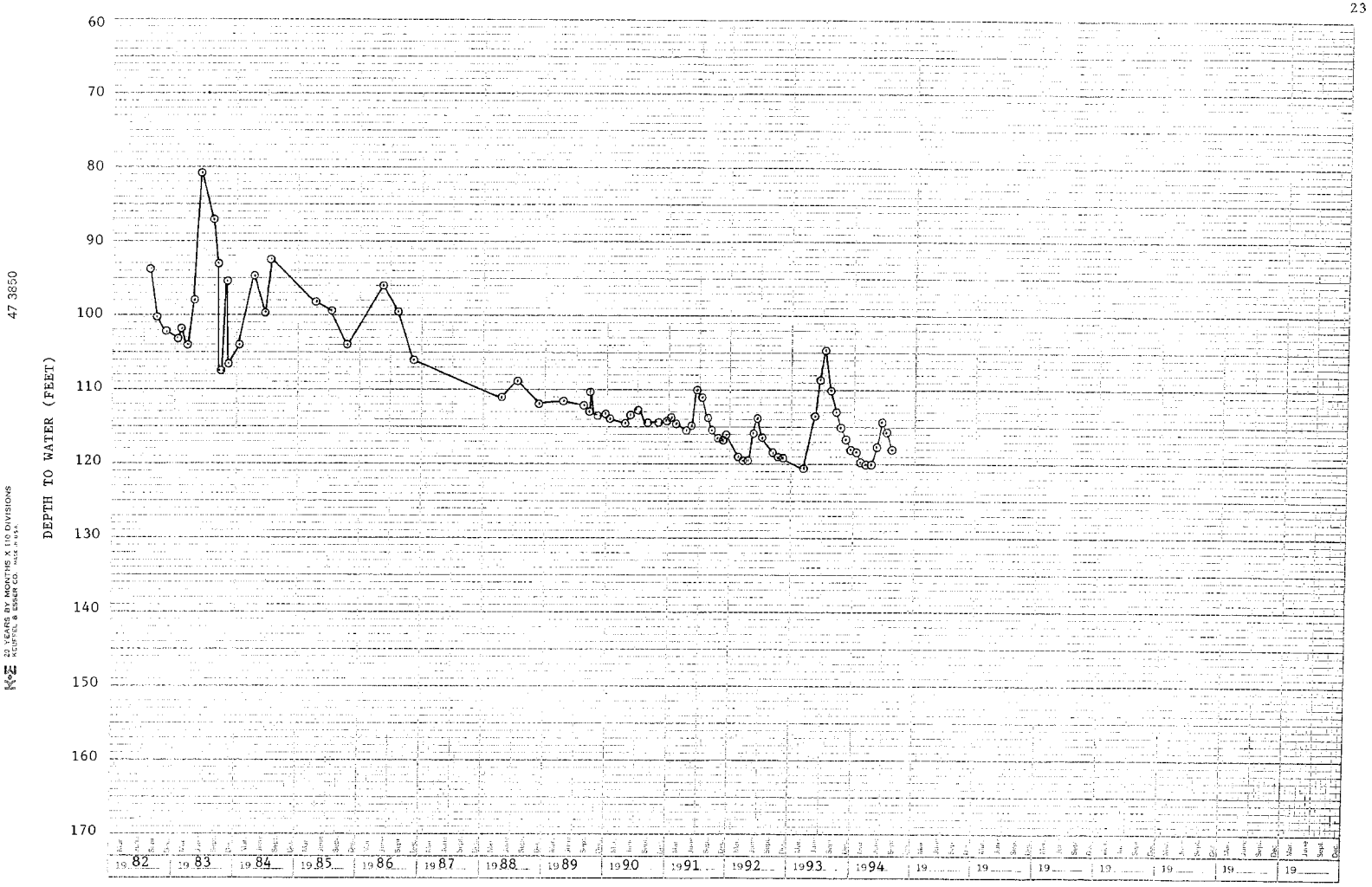


FIGURE 11 - WATER-LEVEL HYDROGRAPH FOR SC-1

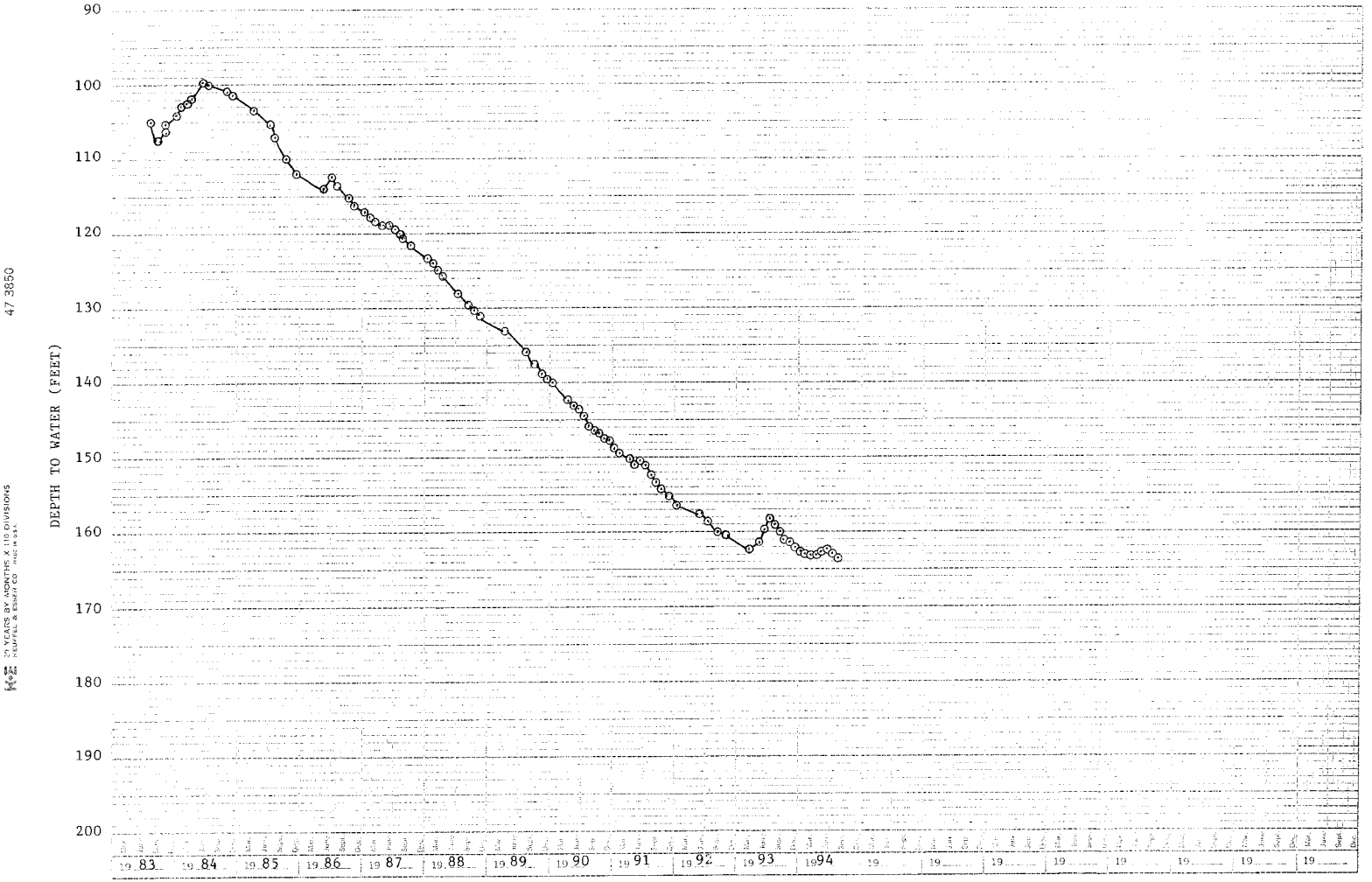


FIGURE 12 - WATER-LEVEL HYDROGRAPH FOR SC-2

two wells respond similarly to recharge events. However, the resulting water-level rises are less in the deeper monitor well than in the shallower monitor well, as would be expected if the source of recharge is from near the land surface.

Shallow Wells

A water-level hydrograph for Well No. 22 is provided in Figure 13. This well is located adjacent to District Well No. 15. This well was dry until June 17, 1993. Depth to water in this well gradually rose during June-September, 1993. Depth to water ranged from about 80.5 to 84.2 feet. Since November 1993, the well has been dry. A water-level hydrograph for Well No. 23 is shown in Figure 14. This well is located adjacent to District Well No. 1. Depth to water has ranged from about 5 to 16 feet during the period of record. This well is located close to Mammoth Creek and appears to be influenced by streamflow. The shallowest water levels were in the Spring and early Summer of 1993. Water levels in Wells No. 22 and 23 were not affected by pumpage of the adjacent District supply wells (No. 15 and 1). 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).

Water-level hydrographs for the remaining shallow monitor wells discussed are provided in Appendix E. Well No. 5M taps shallow volcanic rocks and no water was observed in the overlying glacial till at the time of drilling. Depth to water has ranged from about 7 to 9 feet. The shallowest levels have been in the

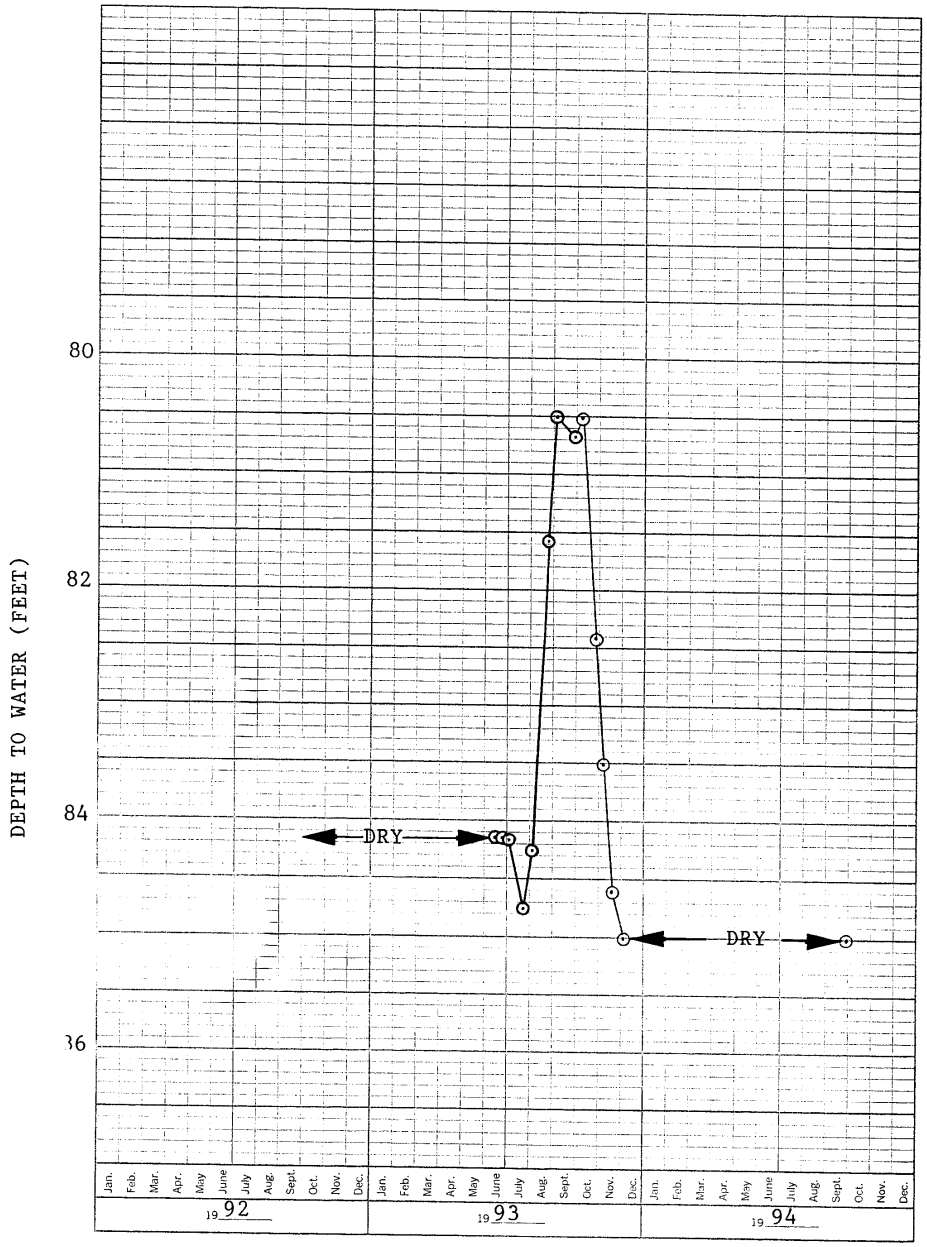


FIGURE 13 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 22

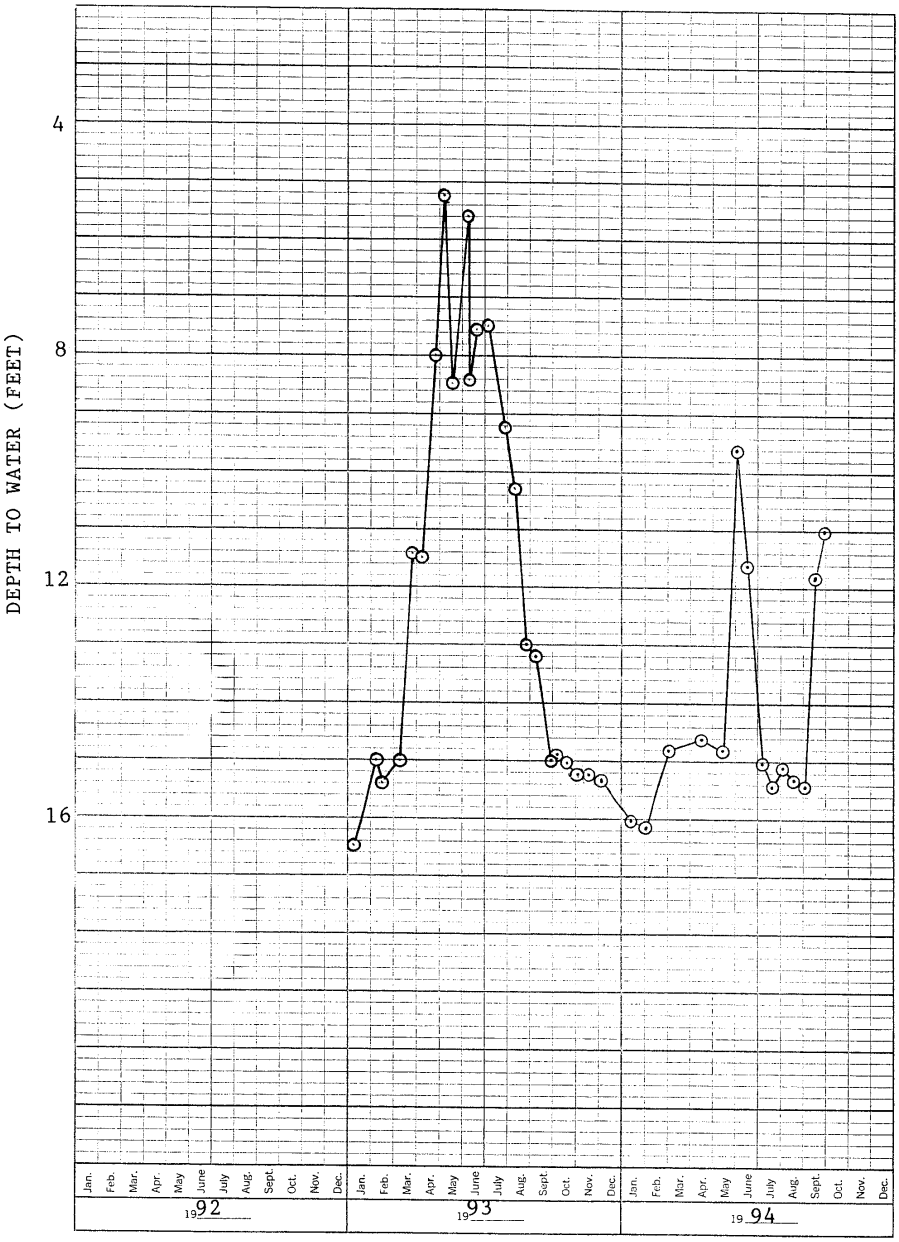


FIGURE 14 - WATER-LEVEL HYDROGRAPH FOR WELL NO. 23

spring and early summer, and the deepest in the summer.

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, due to significant recharge in the vicinity of the meadow. Since May 1993, the water level in this well has generally fallen. By 1994, depth to water was about 40 feet, similar to that prior to 1993.

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

Well No. 12M is located in the western part of the meadow area. The water level in this well was below the bottom of the well from October 1992 through June 10, 1993. By July 15, 1993, the water level had risen to 10.2 feet, following significant recharge. After July 1993, the water level in this well declined, and since December 1993 the well has been dry. The water levels in all three of the shallow wells referenced thus respond significantly to precipitation and recharge.

Water-Level Elevation Contours

Figure 15 shows water-level elevation contours for late September 1994. 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.

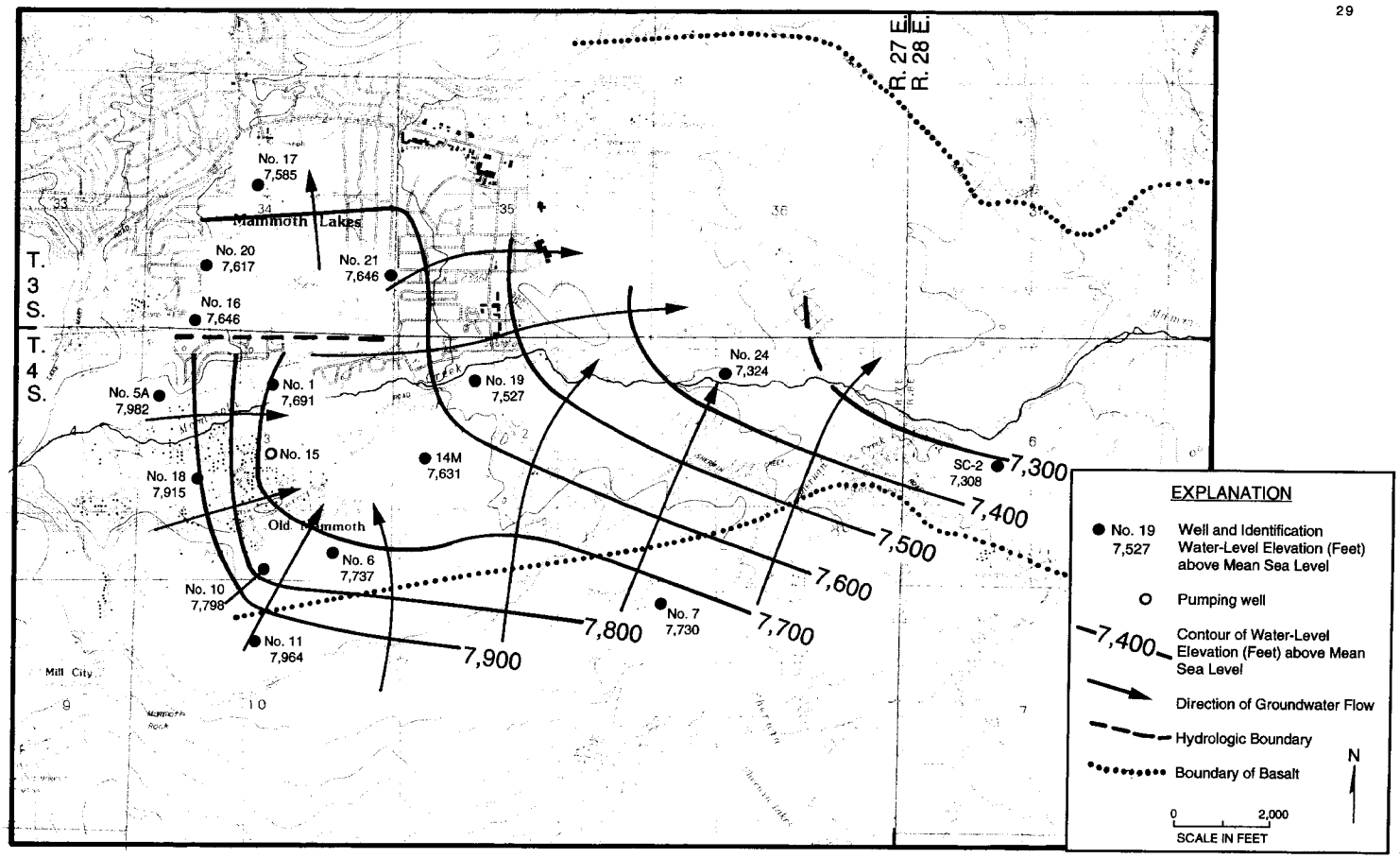


FIGURE 15 - WATER-LEVEL ELEVATIONS IN LATE SEPTEMBER 1994

14M and 21. The direction of groundwater flow in September 1994 was essentially the same as shown in the first annual report for September 1993, except in one area. Because of the higher water-level elevations that have been present in Well No. 16 since its modification compared to earlier, a different direction of groundwater flow is indicated in the area north of the hydrologic boundary. The water-level elevations in Wells No. 16 and 21 are now approximately the same, and a northerly direction of flow is indicated in the area north of the hydrologic boundary. A cone of depression was evident due to pumping of District Wells No. 1, 6, 10, and 15. This cone of depression does not extend east of Wells No. 14M and 19. This map shows only the horizontal component of groundwater flow in the basalt and interbedded glacial till. Other evidence indicates that there is also significant downward flow in the area.

CHEMICAL QUALITY AND TEMPERATURE OF GROUNDWATER

The results of chemical analyses and temperatures of water from the supply wells that were in service during the water year are provided in Appendix F. The analyses for the supply wells are for water samples collected in April and May. There is no evidence of significant changes in chemical quality or temperature of well water during water year 1994, compared to previous information in the first annual report.

VALENTINE RESERVE SPRINGFLOW

Rates of flow of the main spring at the University of California Eastern Sierra Valentine Reserve are provided in Appendix H. Figure 16 shows the variations in springflow during June 15-September 30, 1994. The average flow was measured at 28 gpm on June 15 and steadily decreased to about 22 gpm on July 18. The flow then increased to about 23.4 gpm on July 19. This was associated with precipitation at that time, based on records for a station at Lake Mary. The flow then declined to about 20 gpm on August 22, and then increased to about 21 gpm. The flow gradually increased in late September to about 22 gpm on September 30. These increases were also associated with precipitation. The flow rates of 28 to 21 gpm are very comparable to those measured during most of the Summer 1993 period. There was no noticeable impact of District pumping during the 1994 water year on springflow at the Valentine Reserve.

MAMMOTH CREEK STREAMFLOW

Records of streamflow at the Old Mammoth Road crossing are provided in Appendix H. The mean monthly flow ranged from 6.2 cfs in September 1994 to 35.2 cfs in June 1994. The highest flows were during May-June, 1994. This period coincides with noticeable water level rises in wells tapping the uppermost glacial till and some wells tapping the basalt, as discussed previously.

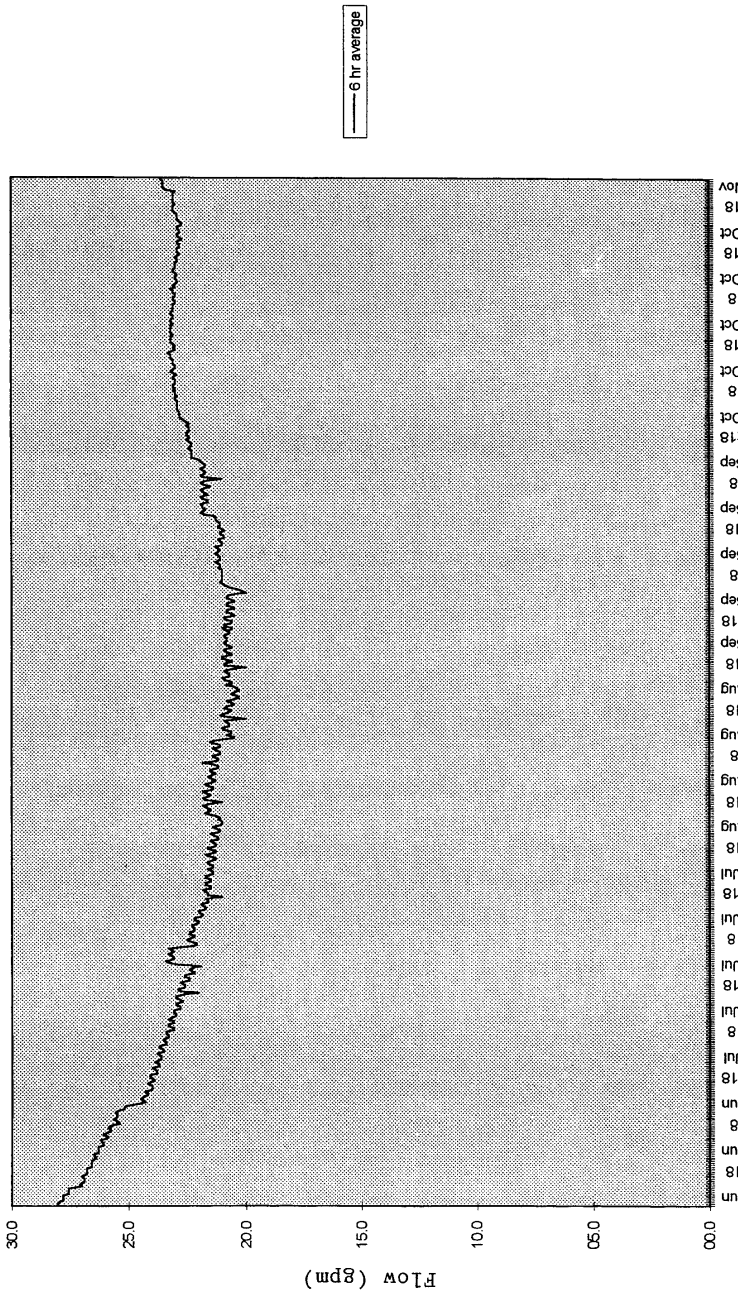


FIGURE 16 - FLOW FOR VALENTINE RESERVE SPRING (1994)

DATA EVALUATION AND INTERPRETATION

Water-level hydrographs for most of the monitor wells and inactive supply wells tapping consolidated rocks in the District well field primarily indicate relatively constant or rising water levels during 1993-94. There were water-level declines in Wells No. 17, 19, and 24, but these wells are distant from the District wells that were pumped. The water-level declines in these wells were similar to each other and likely indicate a lack of influence of recharge during the past drought years. Water-level hydrographs for some wells tapping the uppermost glacial till strata and shallow basalt indicate some recharge during spring and early summer of 1994, coincident with some runoff in the watershed. However, this recharge is indicated to have been less than in 1993. Water-level hydrographs for SC-1 and SC-2, east of the District well field and monitor wells, indicate some influence of recharge and a stabilization for the most recent measurements.

The water-level elevation contour map 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 basalt 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 stable during the 1994 water year. Springflow measurements at the reserve indicate no impact due to District pumping. Significant water-level declines due to pumping have only been observed in or near the pumped wells

themselves. There has thus been no effect on the flow of the Hot Creek headsprings. It is recommended that the monitoring for the next water year be continued at the same location and frequencies as for the 1994 water year.

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.

APPENDIX A

WELL COMPLETION REPORTS FOR SUPPLY WELLS MODIFIED IN 1994

File with DWR

Page 1 of 1

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

Owner's Well No. 16

Date Work Began 06/16/94 , Ended 06/29/94

No. 574384

Local Permit Agency

Permit No. Permit Date

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) ___ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*

TOTAL DEPTH OF BORING 710 (Feet)

TOTAL DEPTH OF COMPLETED WELL 710 (Feet)

WELL OWNER

Name Mammoth County Water District

Mailing Address P.O. Box 597

CITY Mammoth Lakes STATE CA ZIP 93556

WELL LOCATION

Address Meridan

City Mammoth Lakes

County Mono

APN Book ___ Page ___ Parcel ___

or Township 4 S Range 27 E Section 4

or Latitude ___ DEG. ___ MIN. ___ SEC. NORTH Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH

NORTH / WEST / EAST / SOUTH

Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

___ NEW WELL

MODIFICATION/REPAIR

___ Deepen

X Other (Specify) RECONSTRUCT

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

___ MONITORING

WATER SUPPLY

___ Domestic

X Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD CASING DRIVEN FLUID

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL ___ (Ft.) & DATE MEASURED ___

ESTIMATED YIELD* ___ (GPM) & TEST TYPE ___

TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)

* *May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/ GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	420	12-3/4	x				STEEL	12.250	.250	
420	470	12-3/4		x			STEEL	12.250	.250	1/4
470	500	12-3/4	x				STEEL	12.250	.250	
500	680	12-3/4		x			STEEL	12.250	.250	1/4
680	715	12-3/4	x				STEEL	12.250	.250	
+1	156	16			x		STEEL	16"OD	.250&.188	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	60	X			
60	156				GRAVEL

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Johnson Drilling Co. (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 23489 E. Kings Canyon CITY Reedley STATE CA ZIP 93654

Signed Patrick A. Rhodes Jr. (WELL DRILLER/AUTHORIZED REPRESENTATIVE) DATE SIGNED 7/14/94 C-57 LICENSE NUMBER 245802

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

File with DWR

Page 1 of 1

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

Owner's Well No. 17

Date Work Began 06/14/94 , Ended 06/16/94 No. 574386

Local Permit Agency

Permit No. Permit Date

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*

TOTAL DEPTH OF BORING 710 (Feet)

TOTAL DEPTH OF COMPLETED WELL 710 (Feet)

WELL OWNER

Name Mammoth County Water District

Mailing Address P.O. Box 597

CITY Mammoth Lakes STATE CA ZIP 93556

WELL LOCATION

Address Minaret Road

City Mammoth Lakes

County Mono

APN Book ___ Page ___ Parcel ___

or Township 3 S Range 27 E Section 34

or Latitude ___ DEG. MIN. SEC. NORTH Longitude ___ DEG. MIN. SEC. WEST

LOCATION SKETCH

NORTH / WEST / EAST / SOUTH

Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

___ NEW WELL

MODIFICATION/REPAIR

___ Deepen

X Other (Specify) RECONSTRUCT

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

___ MONITORING

WATER SUPPLY

___ Domestic

X Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD CASING DRIVEN FLUID

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL ___ (Ft.) & DATE MEASURED ___

ESTIMATED YIELD* ___ (GPM) & TEST TYPE ___

TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)

* *May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	60	X			
60	188				GRAVEL

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Johnson Drilling Co. (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 23489 E. Kings Canyon CITY Reedley STATE CA ZIP 93654

Signed Patrick L. Rhodes by LB WELL DRILLER/AUTHORIZED REPRESENTATIVE

DATE SIGNED 7/14/94

C-57 LICENSE NUMBER 245802

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

File with DWR

Page 1 of 1

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

Owner's Well No. 18

No. 574387

Date Work Began 05/06/94 , Ended 06/01/94

Local Permit Agency

Permit No. Permit Date

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*

TOTAL DEPTH OF BORING 710 (Feet)

TOTAL DEPTH OF COMPLETED WELL 650 (Feet)

WELL OWNER

Name Mammoth County Water District

Mailing Address P.O. Box 597

CITY Mammoth Lakes STATE CA ZIP 93556

WELL LOCATION

Address Woodman & Old Mammoth Road

City Mammoth Lakes

County Mono

APN Book ___ Page ___ Parcel ___

or Township 4 S Range 27 E Section 3

or Latitude ___ DEG. ___ MIN. ___ SEC. NORTH Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH

NORTH / WEST / EAST / SOUTH

Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

___ NEW WELL

MODIFICATION/REPAIR

___ Deepen

X Other (Specify) RECONSTRUCT

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

___ MONITORING

WATER SUPPLY

___ Domestic

X Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD CASING DRIVEN FLUID

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL ___ (Ft.) & DATE MEASURED ___

ESTIMATED YIELD* ___ (GPM) & TEST TYPE ___

TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)

* *May not be representative of a well's long-term yield.*

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	CASING(S) TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL/ GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	90	12-3/4	x				STEEL	12.250	.250	
90	150	12-3/4		x			STEEL	12.250	.250	1/4
150	240	12-3/4	x				STEEL	12.250	.250	
240	470	12-3/4		x			STEEL	12.250	.250	1/4
470	480	12-3/4	x				STEEL	12.250	.250	
0	47	16			x		STEEL	16"OD	.250	

DEPTH FROM SURFACE Ft.	to Ft.	ANNULAR MATERIAL TYPE: CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	60	X			
60	480				GRAVEL

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Johnson Drilling Co. (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 23489 E. Kings Canyon CITY Reedley STATE CA ZIP 93654

Signed Patrick A Rhodes by KB WELL DRILLER/AUTHORIZED REPRESENTATIVE

DATE SIGNED 7/14/94

C-57 LICENSE NUMBER 245802

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

File with DWR

Page 1 of 1

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. 574388

Owner's Well No. 20

Date Work Began 6/1/94 , Ended 6/10/94

Local Permit Agency

Permit No. Permit Date

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft. to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*

TOTAL DEPTH OF BORING 710 (Feet)

TOTAL DEPTH OF COMPLETED WELL 620 (Feet)

WELL OWNER

Name Mammoth County Water District

Mailing Address P.O. Box 597

CITY Mammoth Lakes STATE CA ZIP 93556

WELL LOCATION

Address Pine Street

City Mammoth Lakes

County Mono

APN Book ___ Page ___ Parcel ___

or Township 4 S Range 27 E Section 4

or Latitude ___ DEG. MIN. SEC. NORTH Longitude ___ DEG. MIN. SEC. WEST

LOCATION SKETCH

NORTH

WEST EAST

SOUTH

Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

___ NEW WELL

MODIFICATION/REPAIR

___ Deepen

X Other (Specify) RECONSTRUCT

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

___ MONITORING

WATER SUPPLY

___ Domestic

X Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD CASING DRIVEN FLUID

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL ___ (Ft.) & DATE MEASURED ___

ESTIMATED YIELD* ___ (GPM) & TEST TYPE ___

TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)

* *May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft. to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONN. DRIVEN	FILL PIPE	MATERIAL/ GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0 : 420	12-3/4x					STEEL	12.250	.250	
0 : 147	16			x		STEEL	15.50	.250	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft. to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0 : 60	X			

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Johnson Drilling Co. (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 23489 E. Kings Canyon CITY Reedley STATE CA ZIP 93654

Signed Patrick A. Rhodes by KB (WELL DRILLER/AUTHORIZED REPRESENTATIVE) DATE SIGNED 7/14/94 C-57 LICENSE NUMBER 245802

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

APPENDIX B

PUMPAGE AND WATER-LEVEL DATA FOR DISTRICT SUPPLY WELLS

MAMMOTH COUNTY WATER DISTRICT MONITOR WELL LEVEL DATA

OCTOBER, 1993 THROUGH SEPTEMBER, 1994

DATE	WELL 4	WELL 5A	WELL 5M	WELL 7	WELL 10M	WELL 11	WELL 11M	WELL 12	WELL 14	WELL 16	WELL 17	WELL 18	WELL 19	WELL 20	WELL 21	WELL 22	WELL 23	WELL 24
10/07/93	-34.60	-5.09	-8.80		-27.00		-19.50	-24.30	-348.70	-458.40	-381.00	-82.92		-413.30	-350.10	-80.51	-14.92	-386.60
10/14/93	-34.80	-5.14	-8.80		-27.00		-21.50	-26.30	-348.20	-457.40		-82.85		-413.10	-351.30	-80.51	-14.90	-386.30
10/21/93	-35.25	-5.25	-8.80		-27.00	-30.50	-23.20	-26.30	-350.40	-457.30	-381.50	-82.90		-413.15	-350.60	-80.60	-15.00	
10/28/93	-35.35	-5.42	-8.82		-27.00	-30.27	-24.31	-26.55	-348.82	-458.98	-381.10	-82.74		-412.78	-349.20	-82.37	-15.18	-387.10
11/04/93	-35.66	-5.56	-8.89		-27.00	-29.91	-25.31	-26.62	-350.70	-457.36	-381.42		-338.72	-412.95	-349.55	-83.50	-15.17	-387.11
11/12/93	-35.94	-5.50	-8.92		-27.00	-29.44	-26.20	-26.76	-350.52	-456.68	-381.20		-338.22	-411.52	-348.44	-83.92	-15.25	-387.48
11/18/93	-36.24	-5.92	-8.96		-27.00	-29.64	-26.80	-26.90	-351.18	-457.22	-381.54	-87.42	-339.62	-412.88	-347.64	-84.62	-15.22	-387.58
11/24/93	-36.52	-6.18	-9.02		-27.00	-29.20	-27.62	-27.00	-351.34	-457.45	-381.62	-89.50	-339.22	-412.76	-348.30	-85.00	-15.30	-387.54
12/02/93	-37.06	-5.85			-27.00	-30.78	-28.71	-27.00	-352.95	-457.42	-381.78	-86.95	-339.33	-413.17	-347.88	-85.00	-15.26	-387.68
01/12/94	-38.42		-9.07		-27.00	-32.11	-28.34	-27.00	-354.48	-457.52	-381.66	-83.90	-340.60	-413.32	-348.86	-85.00	-16.00	-388.10
02/01/94	-39.46	-5.48	-8.85		-27.00		-33.10	-27.00	-354.80	-457.84	-381.78	-82.10	-340.68	-413.63		-85.00	-16.12	-388.64
03/02/94	-40.22	-6.00	-8.80		-27.00	-27.54	-34.36	-27.00	-352.92	-457.80	-381.75	-84.25	-341.40	-413.73		-85.00	-14.77	-388.64
04/18/94	-39.80	-4.50	-7.10	-271.10	-27.00	-26.95	-33.65	-27.00		-457.40	-381.85	-81.70	-342.82	-412.85		-85.00	-14.64	-388.80
05/12/94	-39.74	-4.00	-7.30	-274.57	-27.00	-21.23	-31.06	-27.00	-357.00	-457.45	-381.90		-342.24	-412.89	-349.84	-85.00	-14.76	-388.91
05/20/94	-40.06	-4.18	-7.36	-275.36	-27.00	-21.80	-31.15	-27.00	-356.98	-457.42	-382.10		-343.24	-412.46	-347.90	-85.00	-11.10	-388.98
05/26/94	-39.40		-7.45	-275.55	-27.00		-31.10	-27.00	-358.20	-457.02	-382.10		-342.20	-412.70	-346.22	-85.00		-388.89
06/02/94	-40.50	-3.92	-7.33	-275.66	-27.00	-21.00	-30.95	-27.00			-382.40		-342.50		-345.24	-85.00	-9.60	-388.87
06/09/94	-40.15	-4.30	-7.43	-275.42	-27.00	-19.66	-28.08	-27.00	-358.22	-457.43	-382.25		-342.40		-344.35	-85.00	-10.74	-388.66
06/19/94	-40.11	-4.23	-7.46	-274.60	-27.00	-19.03	-25.45	-27.00	-357.62	-457.07			-342.30		-342.67	-85.00	-11.59	-388.82
06/25/94	-40.15	-4.58	-7.48	-273.90	-27.00	-18.19	-23.86	-27.00	-357.63				-342.49		-341.96	-85.00	-13.61	-388.78
07/08/94	-40.21	-4.67	-7.62	-272.64	-27.00	-18.37	-21.21	-27.00	-357.19	-426.20	-383.45		-342.11	-412.08	-340.32	-85.00	-14.96	-388.61
07/14/94	-40.31	-4.80	-7.70	-272.52	-27.00	-18.33	-22.66	-27.00	-356.73	-420.26	-383.85		-342.61	-412.24	-340.28	-85.00	-15.22	-389.00
07/21/94	-40.07	-4.71	-7.62	-272.20	-27.00	-18.39	-23.97	-27.00	-357.42	-419.92	-383.32		-342.48	-412.26	-339.40	-85.00	-15.37	-388.80
07/28/94	-40.50	-4.68	-7.70	-272.45	-27.00	-18.50	-25.24	-27.00		-419.59	-383.70		-343.00	-412.20	-339.24	-85.00	-15.10	-389.16
08/04/94	-40.31	-4.65	-7.65	-271.98	-27.00	-18.56	-26.51	-27.00	-357.12	-418.92	-383.56		-342.54	-412.10	-339.78	-85.00	-15.07	-389.05
08/11/94	-40.72	-4.70	-7.75	-272.36	-27.00	-19.69	-27.65	-27.00	-358.22	-420.00	-383.92		-343.00	-412.65	-340.96	-85.00		-389.40
08/18/94	-40.73	-4.92	-7.92	-272.40	-27.00	-19.03	-28.66	-27.00	-357.69	-420.42	-383.87			-412.11	-339.61	-85.00	-15.30	-389.30
09/01/94	-40.74	-5.16	-8.04	-271.25	-27.00	-19.53	-30.22	-27.00	-357.74	-425.26	-383.56		-342.66	-412.11	-340.65	-85.00	-15.44	-389.66
09/08/94	-40.79	-5.13	-8.06	-270.91	-27.00	-19.92	-30.95	-27.00	-358.10	-425.90	-383.98	-74.31	-343.05	-412.20	-339.53	-85.00	-13.91	-389.94
09/15/94		-5.54	-8.14	-270.90	-27.00	-21.11	-31.58	-27.00	-358.10		-383.95		-342.96	-412.40	-338.70	-85.00	-11.81	-390.30
09/22/94	-41.40	-5.80	-8.20	-270.60	-27.00		-32.20	-27.00					-342.90		-338.80	-85.00	-11.40	-390.00
09/29/94	-41.50	-5.60	-8.10	-270.60	-27.00	-22.10	-32.80	-27.00		-424.50			-342.70		-338.70	-85.00	-11.00	-390.40
MAXIMUM	-41.50	-6.18	-9.07	-275.66	-27.00	-32.11	-34.36	-27.00	-358.22	-458.98	-383.98	-89.50	-343.24	-413.73	-351.30	-85.00	-16.12	-390.40
MINIMUM	-34.60	-3.92	-7.10	-270.60	-27.00	-18.19	-19.50	-24.30	-348.20	-418.92	-381.00	-74.31	-338.22	-411.52	-338.70	-80.51	-9.60	-386.30

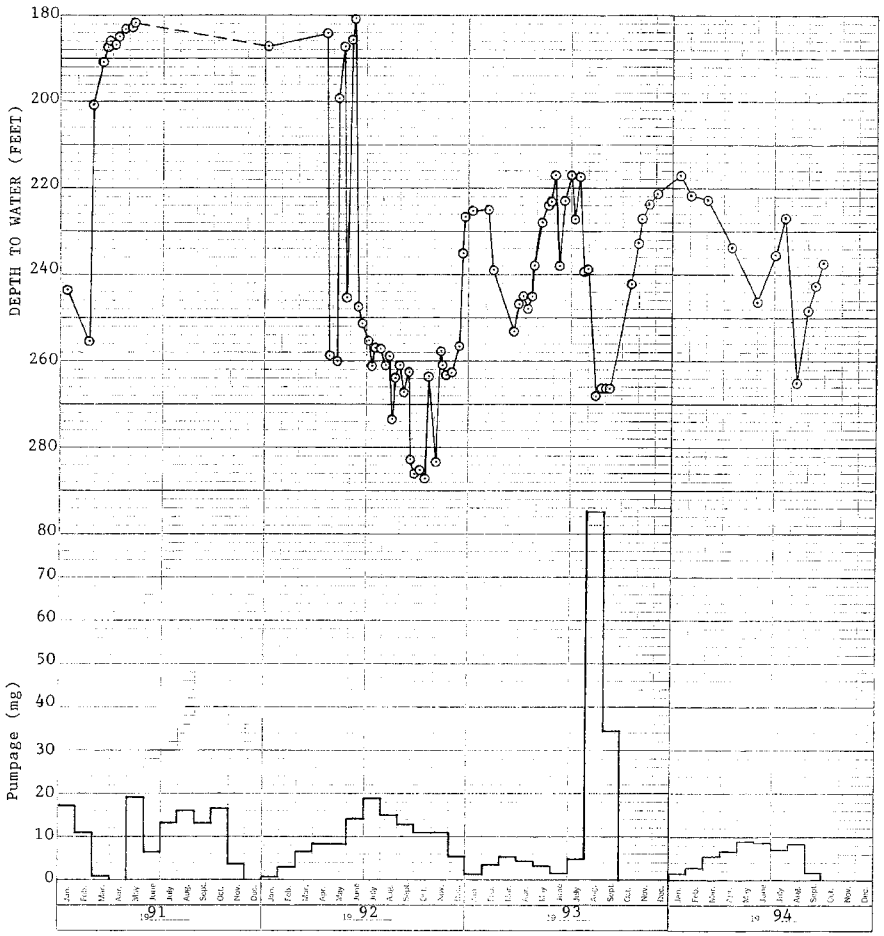
Well 10M Depth = 27' Well 11M Depth = 43' Well 12 Depth = 27'

Well 22 Depth = 85'

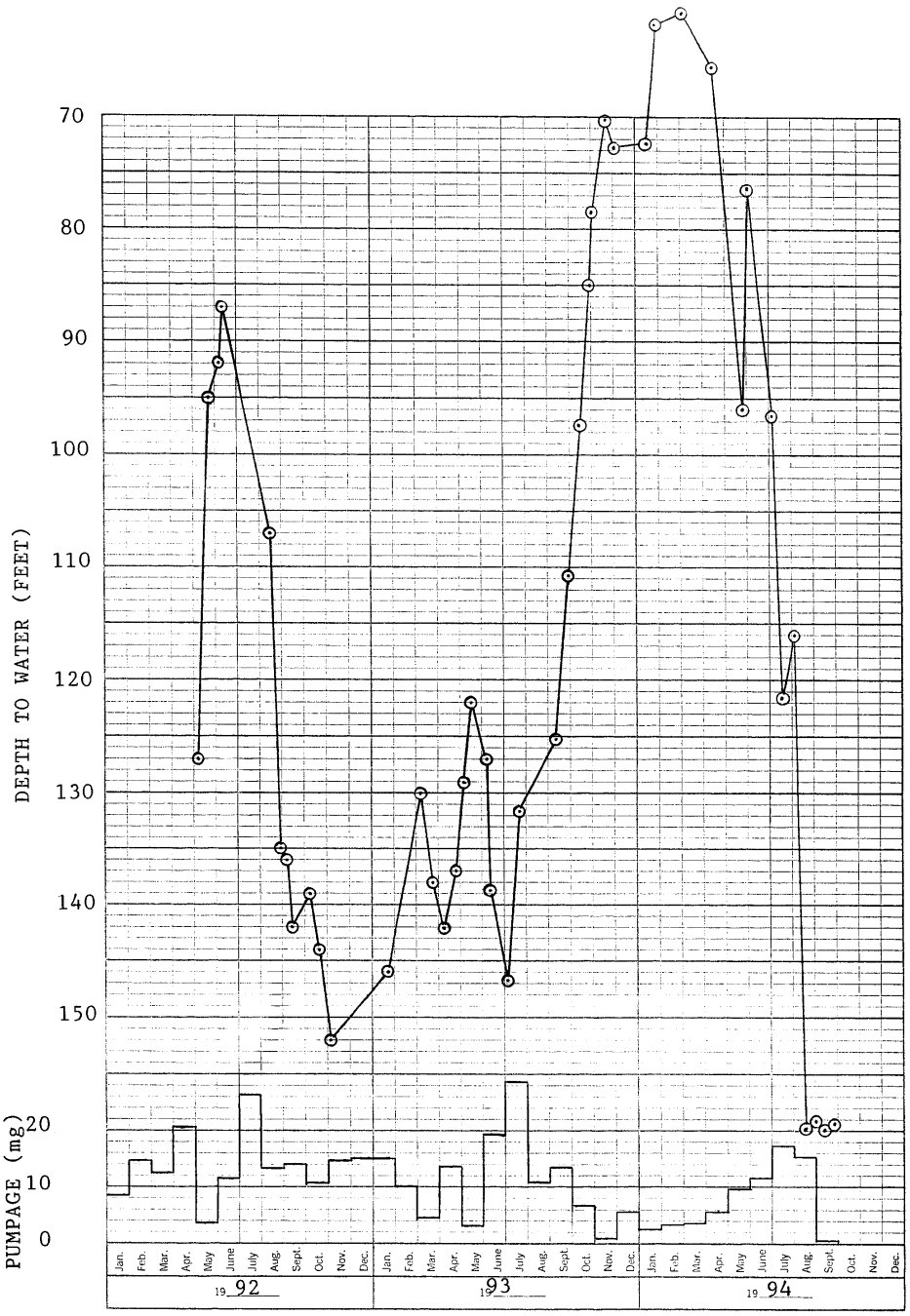
Well 16: 7/8/94 - change in level readings after casing installed entire depth of well

APPENDIX C

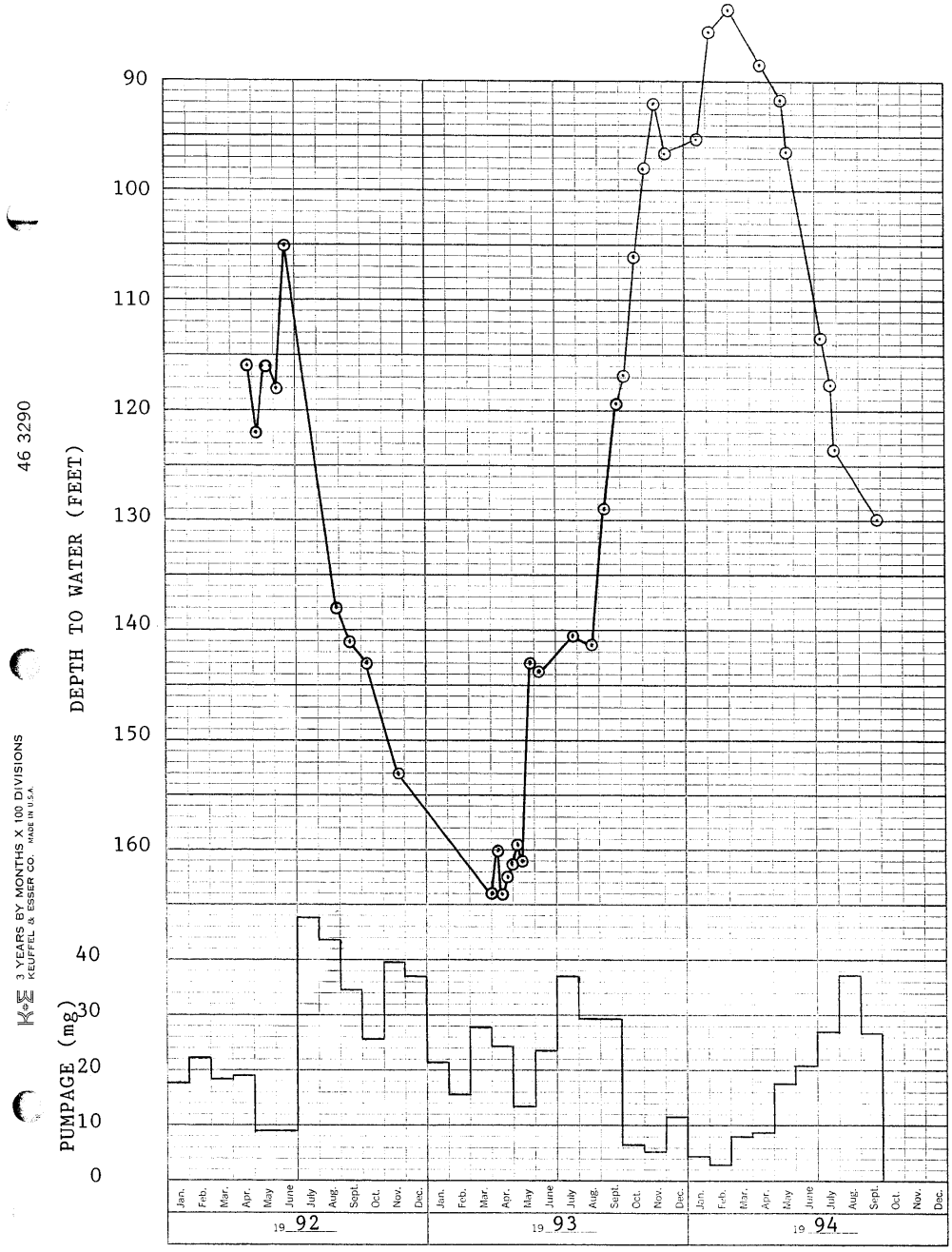
SUPPLEMENTARY WATER-LEVEL AND PUMPAGE HYDROGRAPHS FOR SUPPLY WELLS



WATER-LEVEL AND PUMPAGE HYDROGRAPH FOR DISTRICT WELL NO. 1



WATER-LEVEL HYDROGRAPH FOR DISTRICT WELL NO. 6



WATER-LEVEL HYDROGRAPH FOR WELL NO. 10

APPENDIX D

WATER-LEVEL MEASUREMENTS FOR MONITOR WELLS

DATE	W4	W5	W5A	W5M	W7	W10M	W11	W11M	W12	W14
05/04/93	-31.33									-359.63
05/10/93	-29.88					-27.00	-50.50	-28.00	-27.00	-359.67
05/17/93	-29.75	-4.13				-27.00	-49.27	-24.00	-27.00	-359.83
05/27/93	-27.67	-4.17				-27.00	-44.50	-17.67	-27.00	-358.00
06/03/93	-28.50	-4.16				-27.00	-43.00	-17.91	-27.00	-358.00
06/10/93	-30.50	-3.75				-27.00	-43.83	-20.00	-27.00	-357.50
06/17/93	-30.50	-4.00				-27.00	-42.25	-16.33	-27.00	-357.00
06/18/93										
06/24/93	-30.50	-4.17				-27.00	-41.25	-12.58	-17.92	
06/25/93										
06/28/93										-355.75
07/02/93	-30.25	-4.58				-27.00	-39.75	-6.50	-11.42	-358.83
07/08/93	-30.17	-4.67				-27.00	-38.50	-7.33	-14.00	-353.50
07/15/93	-30.42	-5.08				-27.00	-37.83	-6.33	-10.17	-352.17
07/22/93	-30.48	-5.12				-27.00	-37.80	-6.39	-12.33	-348.00
07/29/93	-30.60	-5.50				-27.00	-36.00	-11.33	-16.65	-347.50
08/05/93	-30.50	-5.60				-27.00	-36.20	-13.00	-20.10	-346.00
08/12/93	-30.80	-5.70				-27.00	-35.30	-14.00	-20.20	-344.10
08/19/93	-32.15					-27.00	-33.40	-13.70	-16.30	-344.15
08/26/93			-3.67							
09/02/93	-33.30		-4.00	-8.00		-27.00	-33.75	-15.80	-21.10	-345.40
09/09/93	-33.60		-4.20	-8.25		-27.00	-33.40	-17.35	-22.80	-343.90
09/16/93	-33.80		-4.33	-8.60		-27.00	-32.28	-16.60	-22.74	-347.40
09/23/93	-34.15		-4.70	-8.80		-27.00	-31.90	-16.70	-22.50	-347.70
09/30/93	-34.30		-5.04	-8.83		-27.00	-31.52	-17.58	-23.10	-348.90
10/07/93	-34.60		-5.09	-8.80		-27.00		-19.50	-24.30	-348.70
10/14/93	-34.80		-5.14	-8.80		-27.00		-21.50	-26.30	-348.20
10/21/93	-35.25		-5.25	-8.80		-27.00	-30.50	-23.20	-26.30	-350.40
10/28/93	-35.35		-5.42	-8.82		-27.00	-30.27	-24.31	-26.55	-348.82
11/04/93	-35.66		-5.56	-8.89		-27.00	-29.91	-25.31	-26.62	-350.70
11/12/93	-35.94		-5.50	-8.92		-27.00	-29.44	-26.20	-26.76	-350.52
11/18/93	-36.24		-5.92	-8.96		-27.00	-29.64	-26.80	-26.90	-351.18
11/24/93	-36.52		-6.18	-9.02		-27.00	-29.20	-27.62	-27.00	-351.34
12/02/93	-37.06		-5.85			-27.00	-30.78	-28.71	-27.00	-352.95
01/12/94	-38.42			-9.07		-27.00	-32.11	-28.34	-27.00	-354.48
02/01/94	-39.46		-5.48	-8.85		-27.00		-33.10	-27.00	-354.80
03/02/94	-40.22		-6.00	-8.80		-27.00	-27.54	-34.36	-27.00	-352.92
04/18/94	-39.80		-4.50	-7.10	-271.10	-27.00	-26.95	-33.65	-27.00	
05/12/94	-39.74		-4.00	-7.30	-274.57	-27.00	-21.23	-31.06	-27.00	-357.00
05/20/94	-40.06		-4.18	-7.36	-275.36	-27.00	-21.80	-31.15	-27.00	-356.98
05/26/94	-39.40			-7.45	-275.55	-27.00		-31.10	-27.00	-358.20
06/02/94	-40.50		-3.92	-7.33	-275.66	-27.00	-21.00	-30.95	-27.00	
06/09/94	-40.15		-4.30	-7.43	-275.42	-27.00	-19.66	-28.08	-27.00	-358.22
06/19/94	-40.11		-4.23	-7.46	-274.60	-27.00	-19.03	-25.45	-27.00	-357.62
06/25/94	-40.15		-4.58	-7.48	-273.90	-27.00	-18.19	-23.86	-27.00	-357.63
07/08/94	-40.21		-4.67	-7.62	-272.64	-27.00	-18.37	-21.21	-27.00	-357.19
07/14/94	-40.31		-4.80	-7.70	-272.52	-27.00	-18.33	-22.66	-27.00	-356.73
07/21/94	-40.07		-4.71	-7.62	-272.20	-27.00	-18.39	-23.97	-27.00	-357.42
07/28/94	-40.50		-4.68	-7.70	-272.45	-27.00	-18.50	-25.24	-27.00	
08/04/94	-40.31		-4.65	-7.65	-271.98	-27.00	-18.56	-26.51	-27.00	-357.12
08/11/94	-40.72		-4.70	-7.75	-272.36	-27.00	-19.69	-27.65	-27.00	-358.22
08/18/94	-40.73		-4.92	-7.92	-272.40	-27.00	-19.03	-28.66	-27.00	-357.69
09/01/94	-40.74		-5.16	-8.04	-271.25	-27.00	-19.53	-30.22	-27.00	-357.74
09/08/94	-40.79		-5.13	-8.06	-270.91	-27.00	-19.92	-30.95	-27.00	-358.10
09/15/94			-5.54	-8.14	-270.90	-27.00	-21.11	-31.58	-27.00	-358.10
09/22/94	-41.40		-5.80	-8.20	-270.60	-27.00		-32.20	-27.00	
09/29/94	-41.50		-5.60	-8.10	-270.60	-27.00	-22.10	-32.80	-27.00	

	W4	W5	W5A	W5M	W7	W10M	W11	W11M	W12	W14
MAXIMUM	-43.22	-9.54	-6.18	-9.07	-275.66	-27.00	-50.50	-39.17	-27.00	-377.08
MINIMUM	-27.67	-3.75	-3.67	-7.10	-270.60	-27.00	-18.19	-6.33	-10.17	-343.90

08/17/93 - Well 5 modified to create deep monitor well (Well 5A)

08/18/93 - Shallow monitor well 5M drilled

Well 10M Depth = 27' Well 11M Depth = 43' Well 12 Depth = 27'

Well 22 Depth = 85'

Well 16: 7/8/94 - change in level readings after casing installed entire depth of well

Date	W16	W17	W18	W19	W20	W21	W22	W23	W24
05/04/93	-457.00						-85.00		
05/10/93	-458.08	-378.67			-410.00	-355.42	-85.00	-8.50	
05/17/93	-456.63	-378.67			-409.75	-357.92	-85.00	-8.25	
05/27/93	-458.83	-378.17			-409.92	-356.42	-85.00		
06/03/93		-378.92			-410.08	-357.08	-85.00		
06/10/93	-456.50	-378.67	-83.67		-410.25	-359.75	-85.00	-8.42	
06/17/93	-456.50	-378.83	-83.08		-410.25	-353.67	-84.15	-7.58	
06/18/93				-332.75					
06/24/93			-83.33				-84.15	-8.00	
06/25/93	-459.58								
06/28/93				-332.33	-410.08	-352.88			
07/02/93	-459.83	-379.00	-82.75	-333.00	-410.83	-352.33	-84.17	-7.50	
07/08/93	-460.25	-378.00		-332.50	-409.83		-84.50	-7.50	
07/15/93		-380.83	-83.00	-333.33	-410.67	-352.92	-84.75	-8.33	
07/22/93		-378.81	-83.30	-332.51	-409.17		-84.75	-8.73	
07/29/93	-459.00	-380.66	-83.08	-332.75	-409.00	-353.00	-84.25	-9.25	
08/05/93	-459.00	-381.85	-83.30	-333.50	-409.60	-352.10	-84.25	-10.33	
08/12/93	-458.80	-381.45	-83.30		-410.70	-352.10	-83.20	-11.50	
08/19/93		-380.90	-83.11	-333.90		-352.40	-81.95	-12.25	
08/26/93			-83.29				-81.58	-13.04	
09/02/93	-458.30	-381.30		-334.40			-80.50	-13.20	-385.40
09/09/93	-458.80	-381.10	-83.20	-334.80	-413.30		-80.65	-13.70	-385.80
09/16/93	-458.90	-381.00	-82.90	-334.40		-350.70	-80.50	-13.96	-386.00
09/23/93	-458.00	-381.30	-82.90	-333.30	-413.30	-350.50	-80.55	-14.30	-386.00
09/30/93		-381.20	-83.33	-334.80			-80.67	-15.00	-386.30
10/07/93	-458.40	-381.00	-82.92		-413.30	-350.10	-80.51	-14.92	-386.60
10/14/93	-457.40		-82.85		-413.10	-351.30	-80.51	-14.90	-386.30
10/21/93	-457.30	-381.50	-82.90		-413.15	-350.60	-80.60	-15.00	
10/28/93	-458.98	-381.10	-82.74		-412.78	-349.20	-82.37	-15.18	-387.10
11/04/93	-457.36	-381.42		-338.72	-412.95	-349.55	-83.50	-15.17	-387.11
11/12/93	-456.68	-381.20		-338.22	-411.52	-348.44	-83.92	-15.25	-387.48
11/18/93	-457.22	-381.54	-87.42	-339.62	-412.88	-347.64	-84.62	-15.22	-387.58
11/24/93	-457.45	-381.62	-89.50	-339.22	-412.76	-348.30	-85.00	-15.30	-387.54
12/02/93	-457.42	-381.78	-86.95	-339.33	-413.17	-347.88	-85.00	-15.26	-387.68
01/12/94	-457.52	-381.66	-83.90	-340.60	-413.32	-348.86	-85.00	-16.00	-388.10
02/01/94	-457.84	-381.78	-82.10	-340.68	-413.63		-85.00	-16.12	-388.64
03/02/94	-457.80	-381.75	-84.25	-341.40	-413.73		-85.00	-14.77	-388.64
04/18/94	-457.40	-381.85	-81.70	-342.82	-412.85		-85.00	-14.64	-388.80
05/12/94	-457.45	-381.90		-342.24	-412.89	-349.84	-85.00	-14.76	-388.91
05/20/94	-457.42	-382.10		-343.24	-412.46	-347.90	-85.00	-11.10	-388.98
05/26/94	-457.02	-382.10		-342.20	-412.70	-346.22	-85.00		-388.89
06/02/94		-382.40		-342.50		-345.24	-85.00	-9.60	-388.87
06/09/94	-457.43	-382.25		-342.40		-344.35	-85.00	-10.74	-388.66
06/19/94	-457.07			-342.30		-342.67	-85.00	-11.59	-388.82
06/25/94				-342.49		-341.96	-85.00	-13.61	-388.78
07/08/94	-426.20	-383.45		-342.11	-412.08	-340.32	-85.00	-14.96	-388.61
07/14/94	-420.26	-383.85		-342.61	-412.24	-340.28	-85.00	-15.22	-389.00
07/21/94	-419.92	-383.32		-342.48	-412.26	-339.40	-85.00	-15.37	-388.80
07/28/94	-419.59	-383.70		-343.00	-412.20	-339.24	-85.00	-15.10	-389.16
08/04/94	-418.92	-383.56		-342.54	-412.10	-339.78	-85.00	-15.07	-389.05
08/11/94	-420.00	-383.92		-343.00	-412.65	-340.96	-85.00		-389.40
08/18/94	-420.42	-383.87			-412.11	-339.61	-85.00	-15.30	-389.30
09/01/94	-425.26	-383.56		-342.66	-412.11	-340.65	-85.00	-15.44	-389.66
09/08/94	-425.90	-383.98	-74.31	-343.05	-412.20	-339.53	-85.00	-13.91	-389.94
09/15/94		-383.95		-342.96	-412.40	-338.70	-85.00	-11.81	-390.30
09/22/94				-342.90		-338.80	-85.00	-11.40	-390.00
09/29/94	-424.50			-342.70		-338.70	-85.00	-11.00	-390.40

	W16	W17	W18	W19	W20	W21	W22	W23	W24
MAXIMUM	-460.25	-383.98	-91.00	-343.24	-413.73	-365.42	-85.00	-16.50	-390.40
MINIMUM	-418.92	-376.33	-74.31	-332.33	-409.00	-338.70	-80.50	-7.50	-385.40

Well 22 Depth = 85'

Well 16: 7/8/94 - change in level readings after casing installed entire depth of well

DATE: 02/16/94

TABLE 1. MONTHLY GROUND-WATER LEVELS

PRELIMINARY DATA
SUBJECT TO REVISION

WELL MW-1
SITE ID 373816118523901
WELL DEPTH 496

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 13, 1993	39.67 S	JUL 23, 1993	26.08 S	NOV 11, 1993	32.50 S		
MAR 02	38.92 S	AUG 26	24.68 S	DEC 16	34.31 S		
JUN 16	27.61 S	SEP 17	29.58 S	JAN 12, 1994	34.55 S		

HIGHEST 24.68 AUG 26, 1993
LOWEST 39.67 JAN 13, 1993

WELL SC-1
SITE ID 373745118554001
WELL DEPTH 132

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 23, 1993	120.46 V	JUN 14, 1993	108.70 V	SEP 17, 1993	113.10 V	DEC 15, 1993	117.96 V
APR 14	114.00 V	JUL 20	104.68 V	OCT 14	115.05 V	JAN 12, 1994	118.20 V
MAY 13	113.52 V	AUG 20	109.95 V	NOV 11	116.60 V		

HIGHEST 104.68 JUL 20, 1993
LOWEST 120.46 MAR 23, 1993

WELL SC-2
SITE ID 373745118554002
WELL DEPTH 230

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 23, 1993	162.35 V	JUN 14, 1993	159.82 V	SEP 17, 1993	160.04 V	DEC 15, 1993	161.97 V
APR 14	162.26 V	JUL 20	158.17 V	OCT 14	160.92 V	JAN 12, 1994	162.61 V
MAY 13	161.74 V	AUG 20	159.02 V	NOV 11	161.29 V		

HIGHEST 158.17 JUL 20, 1993
LOWEST 162.61 JAN 12, 1994

WELL MW-1
SITE ID 373816118523901
WELL DEPTH 496

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 12, 1994	34.55 S	MAR 09, 1994	35.61 S	MAY 16, 1994	33.55 S	JUL 12, 1994	29.60 V
FEB 16	35.32 S	APR 07	35.76 S	JUN 09	26.99 V	AUG 10	33.96 V

HIGHEST 26.99 JUN 09, 1994
LOWEST 35.76 APR 07, 1994

WELL SC-1
SITE ID 373745118554001
WELL DEPTH 132

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 12, 1994	118.20 V	MAR 08, 1994	120.03 V	MAY 16, 1994	117.68 V	JUL 12, 1994	115.62 V
FEB 14	119.61 V	APR 07	119.92 V	JUN 09	114.30 V	AUG 10	117.93 V

HIGHEST 114.30 JUN 09, 1994
LOWEST 120.03 MAR 08, 1994

WELL SC-2
SITE ID 373745118554002
WELL DEPTH 230

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 12, 1994	162.61 V	MAR 08, 1994	163.05 V	MAY 16, 1994	162.58 V	JUL 12, 1994	162.81
FEB 14	162.83 V	APR 07	162.98 V	JUN 09	162.31 V	AUG 10	163.48 V

HIGHEST 162.31 JUN 09, 1994
LOWEST 163.48 AUG 10, 1994

WELL SQ
57080
SITE ID 373742118515703
WELL DEPTH 125

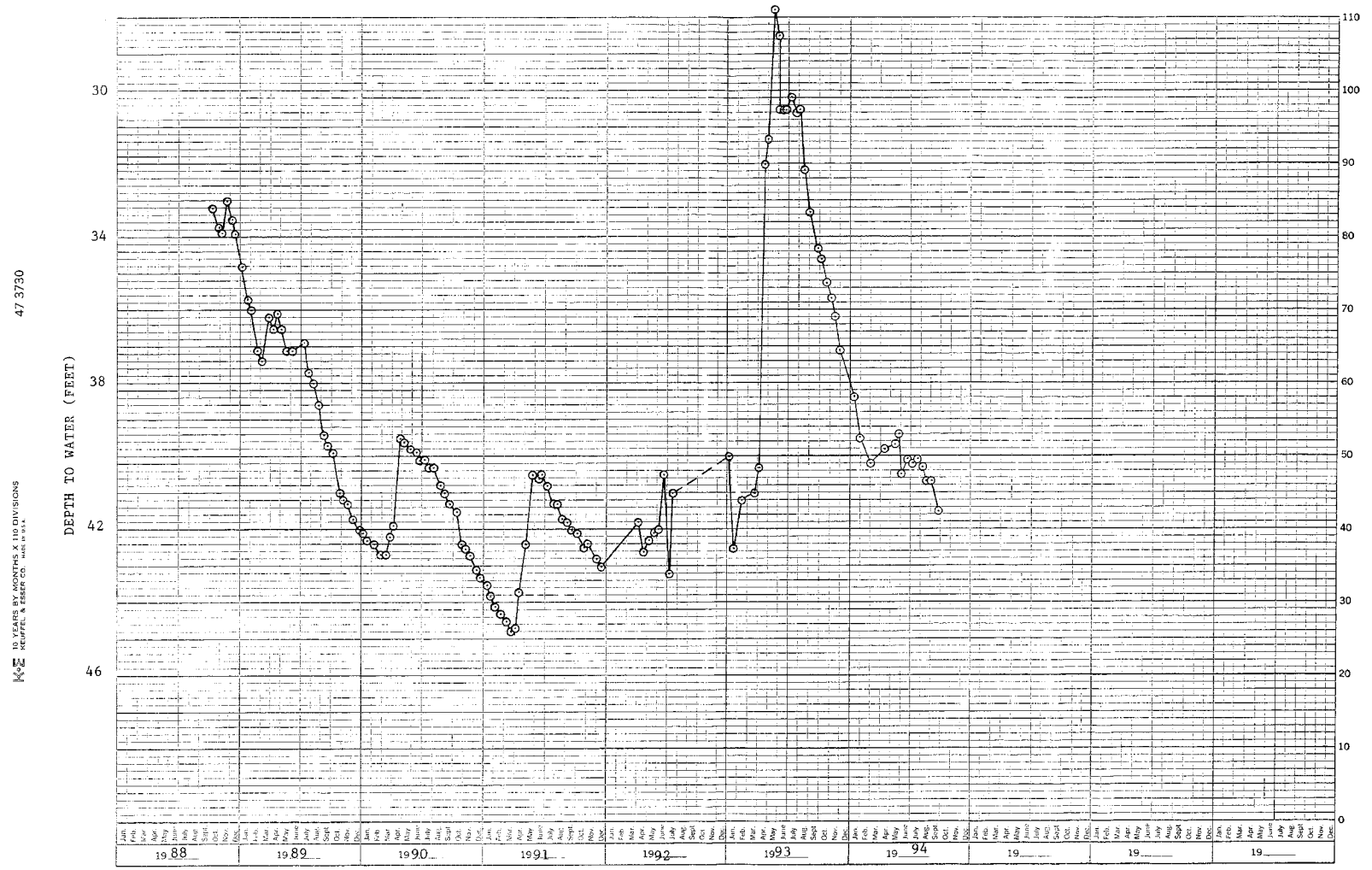
WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 11, 1994	20.75 S	MAR 09, 1994	21.32 V	MAY 16, 1994	21.23 S	JUL 12, 1994	19.60 V
FEB 15	21.46 V	APR 07	21.65 S	JUN 09	19.94 V	AUG 08	20.87 V

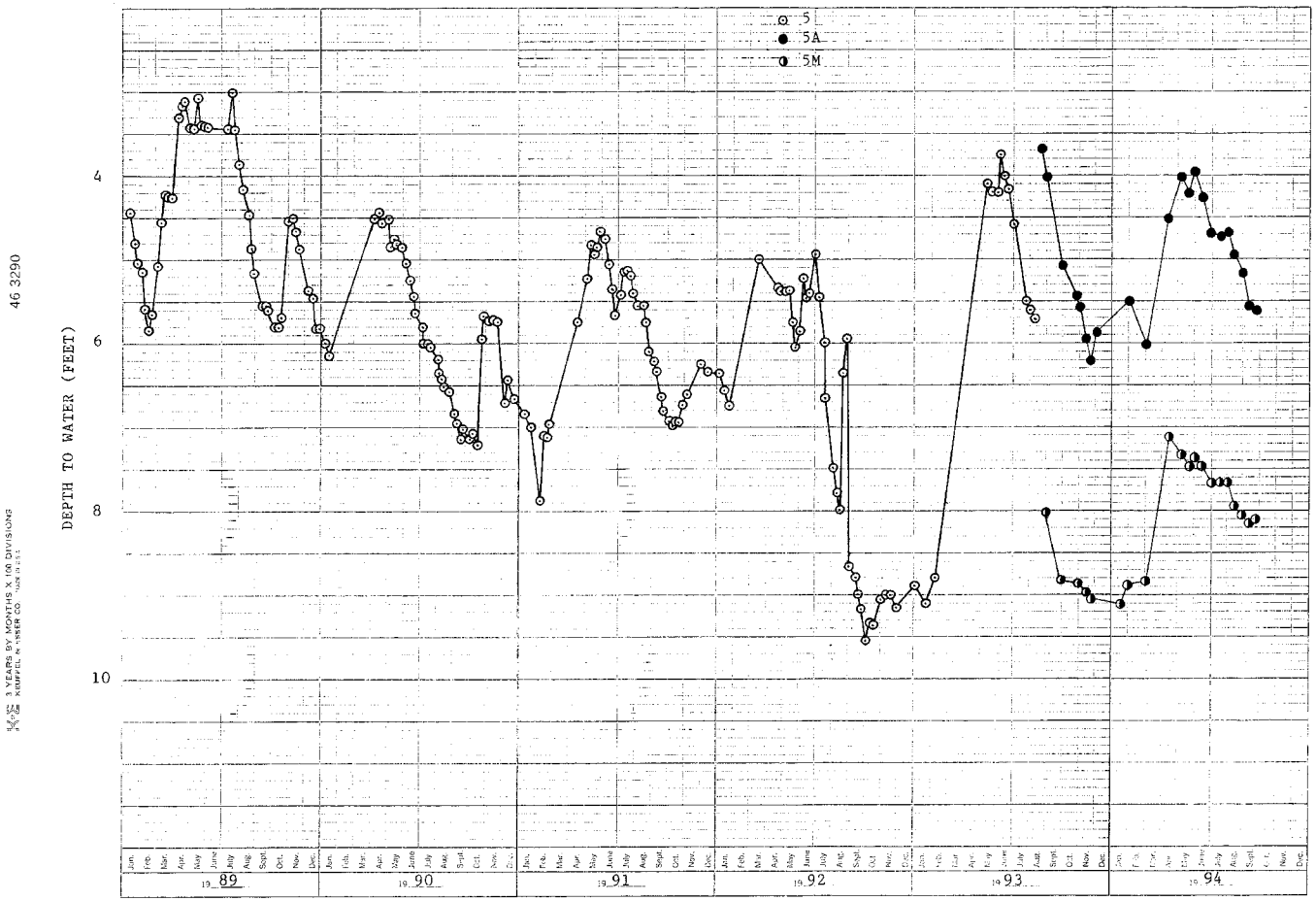
HIGHEST 19.60 JUL 12, 1994
LOWEST 21.65 APR 07, 1994

APPENDIX E

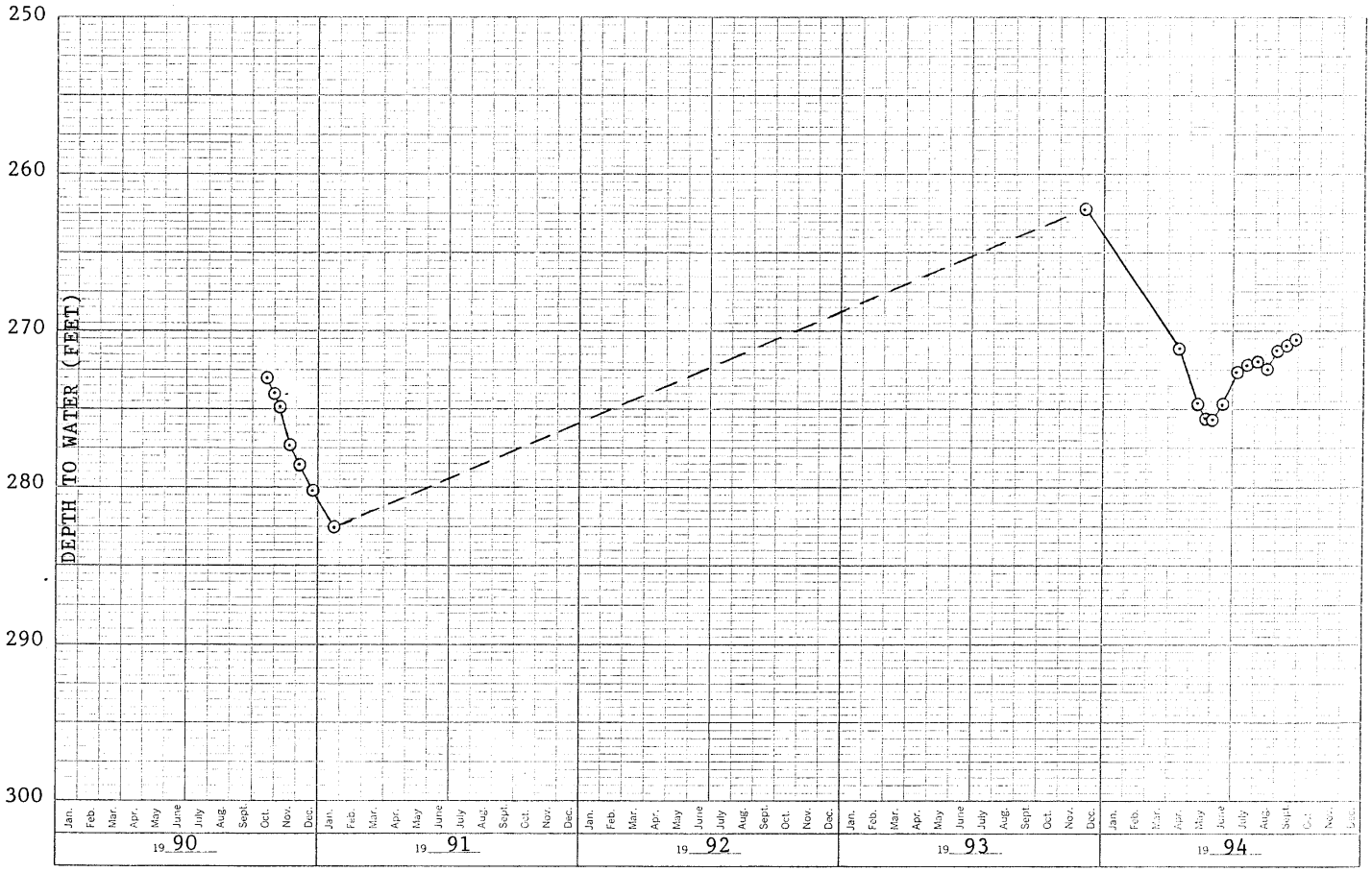
SUPPLEMENTARY WATER-LEVEL HYDROGRAPHS FOR MONITOR WELLS



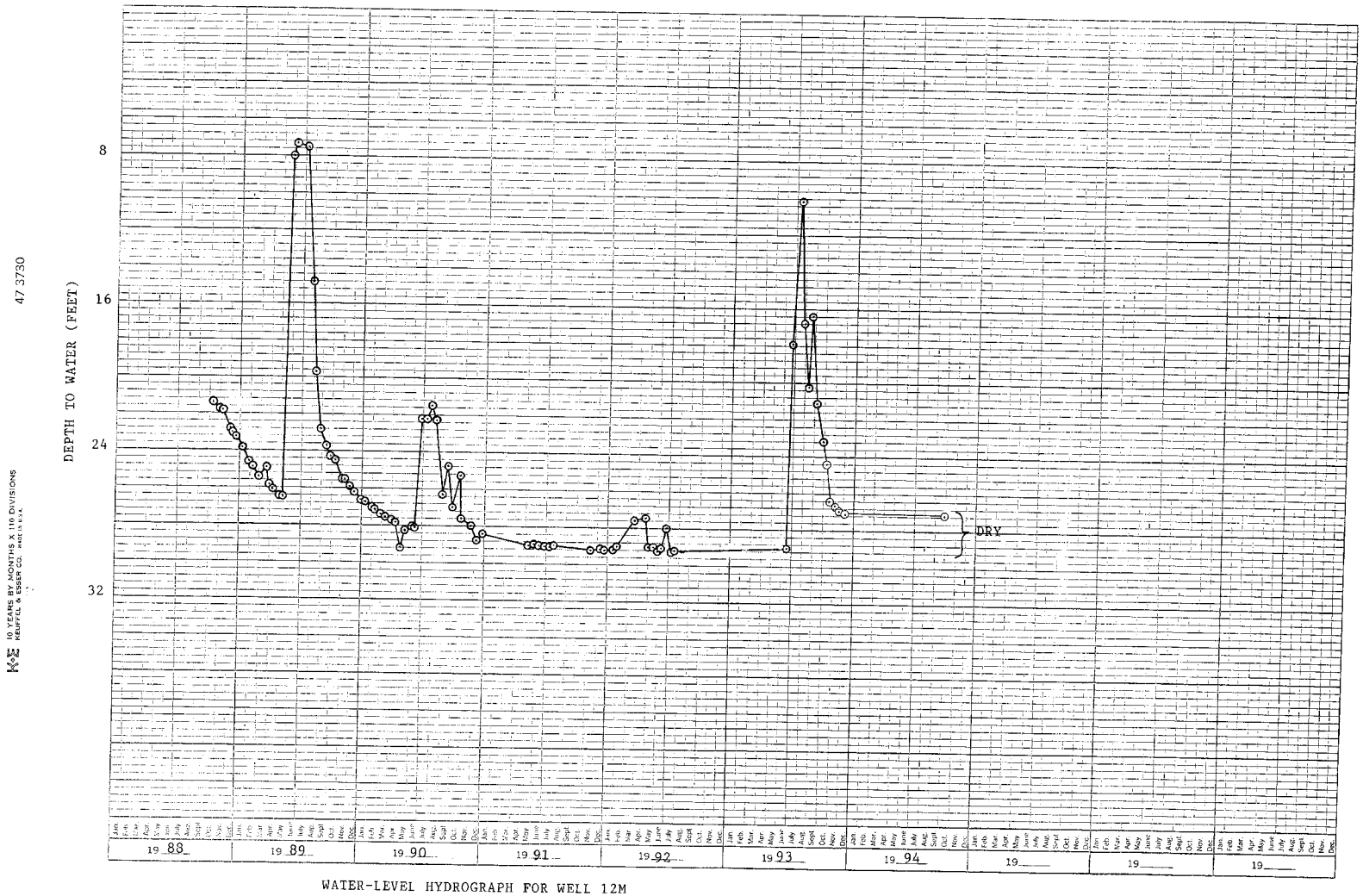
WATER-LEVEL HYDROGRAPH FOR DISTRICT WELL 4M



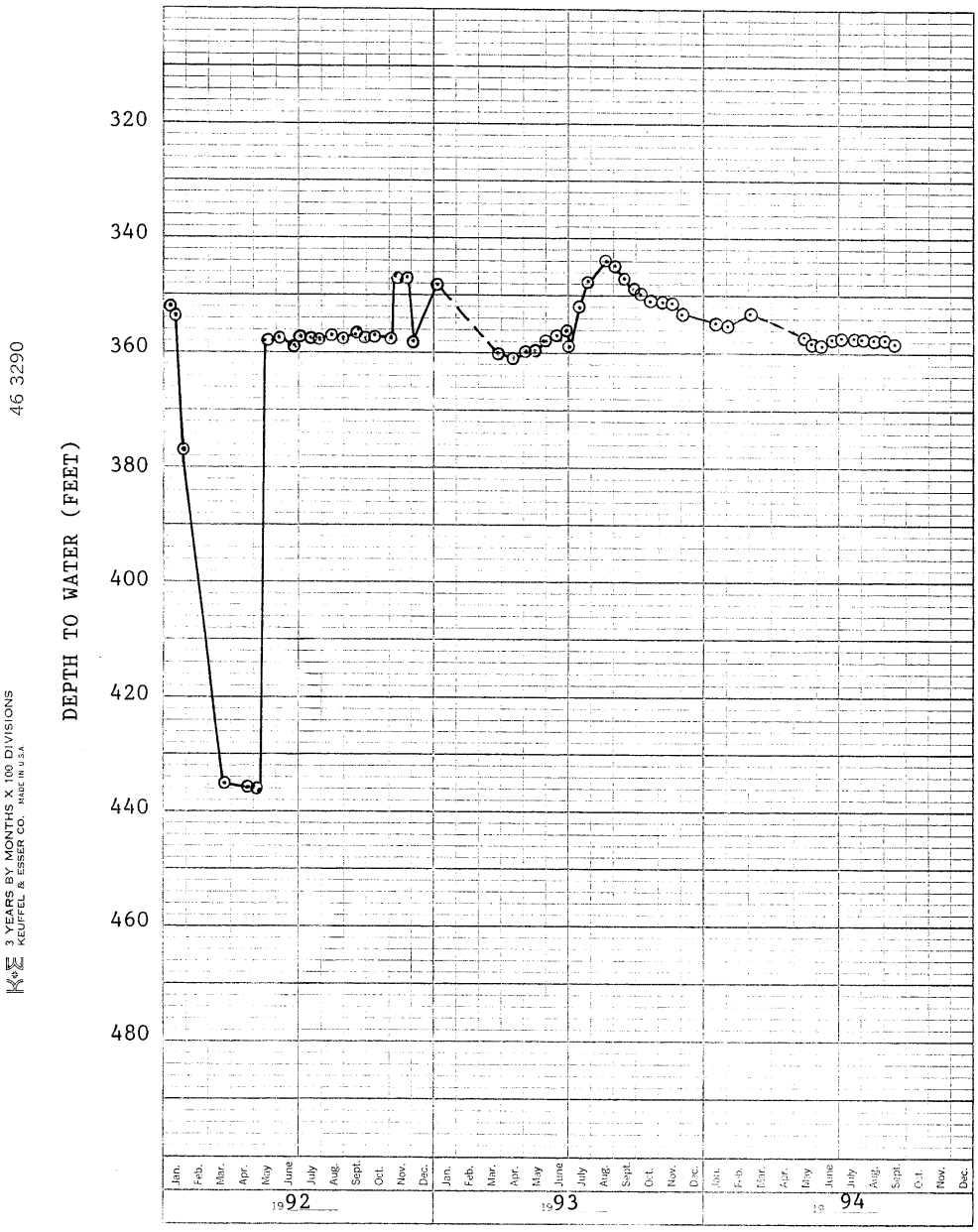
WATER-LEVEL HYDROGRAPH FOR WELLS NO. 5, NO.5A & 5M



WATER-LEVEL HYDROGRAPH FOR WELL NO. 7



WATER-LEVEL HYDROGRAPH FOR WELL 12M



46 3290

KEUFFEL & ESSER CO. 3 YEARS BY MONTHS X 100 DIVISIONS Made in U.S.A.

WATER-LEVEL HYDROGRAPH FOR WELL NO. 14M

APPENDIX F

CHEMICAL ANALYSES OF WATER FROM DISTRICT WELLS

BACTERIOLOGY
WATER TESTING
HAZARDOUS WASTE TESTING
CA DHS CERTIFICATION 1156

P.O. BOX 432
RIVERSIDE, CA 92502

E.S. BABCOCK & SONS, INC.
ESTABLISHED 1906

909/653-3351
FAX 909/653-1662

LABORATORIES
6100 QUAIL VALLEY COURT
RIVERSIDE, CA 92507

05/10/94

To: **Mammoth County Water District**
Attn:
P.O. Box 597
Mammoth Lakes, CA 93546

Lab No. 940414-1028
Invoice No. 52511

Sample Marked:
Well 1 Water

Submitted	Sampled
UPS	TS
04/14/94	04/11/94
14:00	10:00

Chain of Custody on file: Y

Parameter Name	Results	Parameter Name	Results
Total Hardness as $CaCO_3$	78 mg/L	Langelier Index @ 60°C	-0.6
Calcium (Ca)	6 mg/L	Aggressive Index	11.4
Total Alkalinity as $CaCO_3$	120 mg/L	Temperature at Site	11 °C
Hydroxide (OH)	<1 mg/L	Antimony (Sb)	<0.006 mg/L
Carbonate (CO_3)	<1 mg/L	Beryllium (Be)	<0.001 mg/L
Bicarbonate (HCO_3)	146 mg/L	Nickel (Ni)	<0.01 mg/L
Nitrate Nitrogen (NO_3-N)	<0.1 mg/L	Thallium (Tl)	<0.001 mg/L
Cyanide (CN)	<0.01 mg/L		
pH at Lab	7.6 units		
pH at Site	7.4 units		
Total Filterable Residue	170 mg/L		

Date analysis completed: 05/03/94
Notes: Sample submitted past the holding time for Nitrate-N.

cc:

Edward S. Babcock & Sons, Inc.

BACTERIOLOGY
WATER TESTING
HAZARDOUS WASTE TESTING
CA DHS CERTIFICATION 1156

P.O. BOX 432
RIVERSIDE, CA 92502

E.S. BABCOCK & SONS, INC.
ESTABLISHED 1906

909/653-3351
FAX 909/653-1662

LABORATORIES
6100 QUAIL VALLEY COURT
RIVERSIDE, CA 92507

05/10/94

To: Mammoth County Water District
Attn:
P.O. Box 597
Mammoth Lakes, CA 93546

Lab No. 940414-1029
Invoice No. 52511

Sample Marked:
Well 6 Water

Submitted	Sampled
UPS	TS
04/14/94	04/11/94
14:00	09:40

Chain of Custody on file: Y

Parameter Name	Results	Parameter Name	Results
Total Hardness as $CaCO_3$	169 mg/L	Langelier Index @ 60°C	+0.1
Calcium (Ca)	24 mg/L	Aggressive Index	11.8
Total Alkalinity as $CaCO_3$	180 mg/L	Temperature at Site	11.8 °C
Hydroxide (OH)	<1 mg/L	Antimony (Sb)	<0.006 mg/L
Carbonate (CO_3)	<1 mg/L	Beryllium (Be)	<0.001 mg/L
Bicarbonate (HCO_3)	220 mg/L	Nickel (Ni)	<0.01 mg/L
Nitrate Nitrogen (NO_3-N)	<0.1 mg/L	Thallium (Tl)	<0.001 mg/L
Cyanide (CN)	<0.01 mg/L		
pH at Lab	7.9 units		
pH at Site	7.3 units		
Total Filterable Residue	275 mg/L		

Date analysis completed: 05/03/94
Notes: Sample submitted past the holding time for Nitrate-N.

cc:

Edward S. Babcock & Sons, Inc.

Allison Mack

E. S. BABCOCK & SONS, INC. (909)653-3351
P. O. BOX 432
RIVERSIDE, CA 92502

GENERAL MINERAL & PHYSICAL, & INORGANIC ANALYSIS (8/93)

Date of Report: 05/19/94 — Sample ID No.940420-1486
Laboratory — Signature Lab Director:
Name: E.S. BABCOCK & SONS
Name of Sampler:KH — Employed By:Mammoth Co. Water Dist.
Date/Time Sample Collected: 94/04/18/1055 — Date/Time Sample Received @ Lab: 94/04/20/1230 — Date Analyses Completed: 94/05/16

System Name: MAMMOTH CWD — CORROSIVITY & PHASE 5 INORGANICS — System Number: 2610001
Name or Number of Sample Source: WELL 10

User ID: TAN — Station Number: 04S/27E-03P01 M
Date/Time of Sample: |94|04|18|1055| (YY MM DD TTTT) — Laboratory Code: 4790
Date Analysis Completed: |94|05|16| (YY MM DD)
Submitted by:_____ Phone #:_____

MCL	REPORTING UNITS	CONSTITUENT	ENTRY #	ANALYSES RESULTS	DLR
	mg/L	Total Hardness (as CaCO3)	00900	109	
	mg/L	Calcium (Ca)	00916	22	
	mg/L	Magnesium (Mg)	00927		
	mg/L	Sodium (NA)	00929		
	mg/L	Potassium (K)	00937		
Total Cations		Meq/L Value: 1.1			
	mg/L	Total Alkalinity (AS CaCO3)	00410	230	
	mg/L	Hydroxide (OH)	71830	< 1	
	mg/L	Carbonate (CO3)	00445	< 1	
	mg/L	Bicarbonate (HCO3)	00440	281	
*	mg/L*	Sulfate (SO4)	00945		0.5
*	mg/L*	Chloride (Cl)	00940		
45	mg/L	Nitrate (as NO3)	71850		
****	mg/L	Fluoride (F) Temp. Depend.	00951		0.1
Total Anions		Meq/L Value: 4.6			
	Std. Units	PH (Laboratory)	00403	7.5	
**	umho/cm**	Specific Conductance (E.C.)	00095		
***	mg/L***	Total Filterable Residue at 180C (TDS)	70300	325	
	Units	Apparent Color (Unfiltered)	00081		
	TON	Odor Threshold at 60 C	00086		
	NTU	Lab Turbidity	82079		
0.5	mg/L	MBAS	38260		

* 250-500-600 ** 900-1600-2200 *** 500-1000-1500 **** 1.4-2.4

E. S. BABCOCK & SONS, INC. (909)653-3351
P. O. BOX 432
RIVERSIDE, CA 92502

ADDITIONAL ANALYSES 940420-1486

MCL	REPORTING UNITS	CONSTITUENT	ENTRY #	ANALYSES RESULTS		DLR
		Langelier Index at 60 C	71813		0.1	
	Std. Units	Field PH	00400		7.25	
		Agressiveness Index	82383		11.7	
*****	ug/L	Nitrate as Nitrogen(N)	00618	<	400	400
*****	ug/L	Beryllium	01012	<	1	1.0
*****	ug/L	Thallium	01059	<	1	1.0
*****	ug/L	Nickel	01067	<	10	10.0
*****	ug/L	Antimony	01097	<	6	6.0
*****	ug/L	Cyanide	01291	<	100	100.0

***** New or revised MCL pending

Laboratory comments and description of any additional compounds found:

Invoice No. 52707 Lab No. 940420-1486

WATER QUALITY DATA OCTOBER, 1994

Parameter	Well 1	Well 4	Well 5A	Well 5M	Well 6	Well 7	Well 10	Well 10M	Well 11	Well 11M	Well 12	Well 14	Well 15
Sample Date	10/07/94	10/28/94	10/24/94	10/24/94	10/24/94	1984	10/27/94		10/26/94	10/26/94			10/06/94
Temperature F	49.1	46.4	53.6	53.6	50.9		50.9		50.9	49.1			56.3
pH	7.4	7.1	6.8	6.6	7.4	7.8	7		8	7.3			7.9
Electrical Conductivity @ 25 C	270	108	724	696	359	320	496		125	598			351
Total Dissolved Solids @ 180 C	138	94	480	416	309	150	309		33	409			241
Alkalinity as CaCO3	135	60	381	348	184	115	261		25	299			180

Notes: No water in Wells 10M, 12, and 22
Well 14: no access

WATER QUALITY DATA OCTOBER, 1994

Parameter	Well 16	Well 17	Well 18	Well 19	Well 20	Well 21	Well 22	Well 23	Well 24
Sample Date	1992	1992	10/06/94	10/24/94	1992	1992		11/02/94	11/02/94
Temperature F	69.8	66.2	63.5	48.2	59			50.9	50
pH	7.1	7.7	7.7	7.8	7	7.7		7.2	7
Electrical Conductivity @ 25 C	690	350	507	220	350	270		122	150
Total Dissolved Solids @ 180 C	455	250	355	179	230	235		73	141
Alkalinity as CaCO3	366	158	267	110	178	133		63	71

Notes: No water in Wells 10M, 12, and 22

APPENDIX G

VALENTINE RESERVE SPRINGFLOW

Valentine North Spring			
Date	Time	6 hr average	
	discharge (gpm)		
15-Jun	0:27	28.0	
15-Jun	6:27	28.0	
15-Jun	12:27	28.0	
15-Jun	18:27	27.8	
16-Jun	0:27	27.8	
16-Jun	6:27	27.8	
16-Jun	12:27	27.8	
16-Jun	18:27	27.6	
17-Jun	0:27	27.6	
17-Jun	6:27	27.6	
17-Jun	12:27	27.6	
18-Jun	0:18	27.0	
18-Jun	6:18	27.1	
18-Jun	12:18	27.0	
18-Jun	18:18	26.9	
19-Jun	0:18	26.9	
19-Jun	6:18	27.0	
19-Jun	12:18	27.0	
19-Jun	18:18	26.8	
20-Jun	0:18	26.8	
20-Jun	6:18	26.8	
20-Jun	12:18	26.8	
20-Jun	18:18	26.6	
21-Jun	0:18	26.6	
21-Jun	6:18	26.6	
21-Jun	12:18	26.6	
21-Jun	18:18	26.5	
22-Jun	0:18	26.4	
22-Jun	6:18	26.5	
22-Jun	12:18	26.5	
22-Jun	18:18	26.3	
23-Jun	0:18	26.3	
23-Jun	6:18	26.3	
23-Jun	12:18	26.3	
23-Jun	18:18	26.1	
24-Jun	0:18	26.1	
24-Jun	6:18	26.2	
24-Jun	12:18	26.2	
24-Jun	18:18	26.0	
25-Jun	0:18	25.9	
25-Jun	6:18	26.1	
25-Jun	12:18	26.0	
25-Jun	18:18	25.8	
26-Jun	0:18	25.8	

26-Jun	6:18	25.9	
26-Jun	12:18	25.8	
26-Jun	18:18	25.4	
27-Jun	0:18	25.5	
27-Jun	6:18	25.7	
27-Jun	12:18	25.6	
27-Jun	18:18	25.5	
28-Jun	0:18	25.5	
28-Jun	6:18	25.6	
28-Jun	12:18	25.5	
28-Jun	18:18	25.2	
29-Jun	0:18	25.2	
29-Jun	6:18	25.1	
29-Jun	12:18	24.6	
29-Jun	18:18	24.3	
30-Jun	0:18	24.4	
30-Jun	6:18	24.5	
30-Jun	12:18	24.4	
30-Jun	18:18	24.2	
1-Jul	0:18	24.2	
1-Jul	6:18	24.3	
1-Jul	12:18	24.0	
1-Jul	18:18	24.0	
2-Jul	0:18	24.0	
2-Jul	6:18	24.2	
2-Jul	12:18	24.1	
2-Jul	18:18	23.9	
3-Jul	0:18	24.0	
3-Jul	6:18	24.1	
3-Jul	12:18	24.1	
3-Jul	18:18	23.8	
4-Jul	0:18	23.8	
4-Jul	6:18	23.9	
4-Jul	12:18	24.0	
4-Jul	18:18	23.7	
5-Jul	0:18	23.7	
5-Jul	6:18	23.9	
5-Jul	12:18	23.8	
5-Jul	18:18	23.6	
6-Jul	0:18	23.6	
6-Jul	6:18	23.7	
6-Jul	12:18	23.8	
6-Jul	18:18	23.5	
7-Jul	0:18	23.5	
7-Jul	6:18	23.7	
7-Jul	12:18	23.7	
7-Jul	18:18	23.4	
8-Jul	0:18	23.4	
8-Jul	6:18	23.5	

8-Jul	12:18	23.5
8-Jul	18:18	23.3
9-Jul	0:18	23.3
9-Jul	6:18	23.4
9-Jul	12:18	23.4
9-Jul	18:18	23.1
10-Jul	0:18	23.1
10-Jul	6:18	23.3
10-Jul	12:18	23.3
10-Jul	18:18	23.1
11-Jul	0:18	23.1
11-Jul	6:18	23.3
11-Jul	12:18	23.2
11-Jul	18:18	23.0
12-Jul	0:18	23.0
12-Jul	6:18	23.1
12-Jul	12:18	23.1
12-Jul	18:18	22.8
13-Jul	0:18	22.8
13-Jul	6:18	23.0
13-Jul	12:18	23.0
13-Jul	18:18	22.7
14-Jul	0:18	22.8
14-Jul	6:18	23.0
14-Jul	12:18	23.0
14-Jul	18:18	22.7

07/1 0:18 22.0

15-Jul	6:18	22.9	
15-Jul	12:18	22.9	
15-Jul	18:18	22.6	
16-Jul	0:18	22.6	
16-Jul	6:18	22.7	
16-Jul	12:18	22.8	
16-Jul	18:18	22.4	
17-Jul	0:18	22.4	
17-Jul	6:18	22.6	
17-Jul	12:18	22.6	
17-Jul	18:18	22.2	
18-Jul	0:18	22.3	
18-Jul	6:18	22.4	
18-Jul	12:18	22.3	
18-Jul	18:18	21.9	
19-Jul	0:18	22.9	
19-Jul	6:18	23.3	
19-Jul	12:18	23.4	
19-Jul	18:18	23.1	
20-Jul	0:18	23.1	
20-Jul	6:18	23.2	
20-Jul	12:18	23.3	

20-Jul	18:18	23.1
21-Jul	0:18	23.2
21-Jul	6:18	23.3
21-Jul	12:18	22.4
21-Jul	18:18	22.1
22-Jul	0:18	22.1
22-Jul	6:18	22.4
22-Jul	12:18	22.5
22-Jul	18:18	22.3
23-Jul	0:18	22.2
23-Jul	6:18	22.4
23-Jul	12:18	22.4
23-Jul	18:18	22.2
24-Jul	0:18	22.2
24-Jul	6:18	22.3
24-Jul	12:18	22.3
24-Jul	18:18	22.1
25-Jul	0:18	22.0
25-Jul	6:18	22.2
25-Jul	12:18	22.2
25-Jul	18:18	21.9
26-Jul	0:18	21.8
26-Jul	6:18	22.0
26-Jul	12:18	22.0
26-Jul	18:18	21.7
27-Jul	0:18	21.7
27-Jul	6:18	21.8
27-Jul	12:18	21.9
27-Jul	18:18	21.6
28-Jul	0:18	21.6
28-Jul	6:18	21.7

07/2 12:18 21.0

28-Jul	18:18	21.6	
29-Jul	0:18	21.6	
29-Jul	6:18	21.7	
29-Jul	12:18	21.8	
29-Jul	18:18	21.5	
30-Jul	0:18	21.5	
30-Jul	6:18	21.7	
30-Jul	12:18	21.7	
30-Jul	18:18	21.5	
31-Jul	0:18	21.5	
31-Jul	6:18	21.7	
31-Jul	12:18	21.7	
31-Jul	18:18	21.4	
1-Aug	0:18	21.4	
1-Aug	6:18	21.5	
1-Aug	12:18	21.6	
1-Aug	18:18	21.4	

2-Aug	0:18	21.4
2-Aug	6:18	21.6
2-Aug	12:18	21.6
2-Aug	18:18	21.4
3-Aug	0:18	21.3
3-Aug	6:18	21.5
3-Aug	12:18	21.7
3-Aug	18:18	21.4
4-Aug	0:18	21.3
4-Aug	6:18	21.5
4-Aug	12:18	21.6
4-Aug	18:18	21.3
5-Aug	0:18	21.3
5-Aug	6:18	21.4
5-Aug	12:18	21.5
5-Aug	18:18	21.2
6-Aug	0:18	21.2
6-Aug	6:18	21.4
6-Aug	12:18	21.5
6-Aug	18:18	21.2
7-Aug	0:18	21.1
7-Aug	6:18	21.3
7-Aug	12:18	21.4
7-Aug	18:18	21.1
8-Aug	0:18	21.0
8-Aug	6:18	21.0
8-Aug	12:18	21.2
8-Aug	18:18	21.1
9-Aug	0:18	21.3
9-Aug	6:18	21.6
9-Aug	12:18	21.7
9-Aug	18:18	21.5
10-Aug	0:18	21.5
10-Aug	6:18	21.7
10-Aug	12:18	21.8
10-Aug	18:18	21.5

08/1 0:18 21.0

11-Aug	6:18	21.7	
11-Aug	12:18	21.8	
11-Aug	18:18	21.6	
12-Aug	0:18	21.5	
12-Aug	6:18	21.7	
12-Aug	12:18	21.8	
12-Aug	18:18	21.4	
13-Aug	0:18	21.4	
13-Aug	6:18	21.6	
13-Aug	12:18	21.7	
13-Aug	18:18	21.4	
14-Aug	0:18	21.3	

14-Aug	6:18	21.5	
14-Aug	12:18	21.6	
14-Aug	18:18	21.4	
15-Aug	0:18	21.3	
15-Aug	6:18	21.5	
15-Aug	12:18	21.5	
15-Aug	18:18	21.2	
16-Aug	0:18	21.2	
16-Aug	6:18	21.4	
16-Aug	12:18	21.8	
16-Aug	18:18	21.2	
17-Aug	0:18	21.2	
17-Aug	6:18	21.4	
17-Aug	12:18	21.4	
17-Aug	18:18	21.1	
18-Aug	0:18	21.1	
18-Aug	6:18	21.3	
18-Aug	12:18	21.4	
18-Aug	18:18	21.1	
19-Aug	0:18	21.1	
19-Aug	6:18	21.4	
19-Aug	12:18	21.5	
19-Aug	18:18	21.2	
20-Aug	0:18	20.5	
20-Aug	6:18	20.5	
20-Aug	12:18	20.8	
20-Aug	18:18	20.6	
21-Aug	0:18	20.6	
21-Aug	6:18	20.9	
21-Aug	12:18	21.0	
21-Aug	18:18	20.7	
22-Aug	0:18	20.7	
22-Aug	6:18	20.8	
22-Aug	12:18	20.9	
22-Aug	18:18	20.0	
23-Aug	0:18	20.6	
23-Aug	6:18	21.1	
23-Aug	12:18	20.9	
23-Aug	18:18	20.7	
24-Aug	0:18	20.6	
24-Aug	6:18	20.9	
24-Aug	12:18	20.8	
24-Aug	18:18	20.5	
25-Aug	0:18	20.6	
25-Aug	6:18	20.8	
25-Aug	12:18	20.5	
25-Aug	18:18	20.3	
26-Aug	0:18	20.4	
26-Aug	6:18	20.6	

26-Aug	12:18	20.5
26-Aug	18:18	20.3
27-Aug	0:18	20.4
27-Aug	6:18	20.5
27-Aug	12:18	20.8
27-Aug	18:18	20.6
28-Aug	0:18	20.7
28-Aug	6:18	20.9
28-Aug	12:18	21.0
28-Aug	18:18	20.7
29-Aug	0:18	20.7
29-Aug	6:18	20.8
29-Aug	12:18	20.9
29-Aug	18:18	20.6

08/3 0:18 20.0

30-Aug	6:18	20.9	
30-Aug	12:18	20.9	
30-Aug	18:18	20.6	
31-Aug	0:18	20.7	
31-Aug	6:18	21.0	
31-Aug	12:18	21.0	
31-Aug	18:18	20.6	
1-Sep	0:18	20.7	
1-Sep	6:18	20.9	
1-Sep	12:18	20.9	
1-Sep	18:18	20.6	
2-Sep	0:18	20.7	
2-Sep	6:18	20.9	
2-Sep	12:18	20.9	
2-Sep	18:18	20.8	
3-Sep	0:18	20.8	
3-Sep	6:18	20.9	
3-Sep	12:18	20.9	
3-Sep	18:18	20.7	
4-Sep	0:18	20.7	
4-Sep	6:18	20.9	
4-Sep	12:18	21.0	
4-Sep	18:18	20.6	
5-Sep	0:18	20.6	
5-Sep	6:18	20.9	
5-Sep	12:18	20.9	
5-Sep	18:18	20.6	
6-Sep	0:18	20.6	
6-Sep	6:18	20.9	
6-Sep	12:18	20.9	
6-Sep	18:18	20.5	
7-Sep	0:18	20.6	
7-Sep	6:18	20.8	
7-Sep	12:18	20.8	

7-Sep	18:18	20.5
8-Sep	0:18	20.6
8-Sep	6:18	20.8
8-Sep	12:18	20.8
8-Sep	18:18	20.5
9-Sep	0:18	20.6
9-Sep	6:18	20.8
9-Sep	12:18	20.8
9-Sep	18:18	20.6
10-Sep	0:18	20.0
10-Sep	6:18	20.2
10-Sep	12:18	20.4
10-Sep	18:18	20.7
11-Sep	0:18	20.8
11-Sep	6:18	21.0
11-Sep	12:18	21.1
11-Sep	18:18	21.0
12-Sep	0:18	21.0
12-Sep	6:18	21.0

09/1 12:18 21.0

12-Sep	18:18	21.0	
13-Sep	0:18	21.0	
13-Sep	6:18	21.0	
13-Sep	12:18	21.2	
13-Sep	18:18	21.1	
14-Sep	0:18	21.1	
14-Sep	6:18	21.3	
14-Sep	12:18	21.2	
14-Sep	18:18	21.1	
15-Sep	0:18	21.1	
15-Sep	6:18	21.2	
15-Sep	12:18	21.3	
15-Sep	18:18	21.2	
16-Sep	0:18	21.1	
16-Sep	6:18	21.2	
16-Sep	12:18	21.3	
16-Sep	18:18	21.0	
17-Sep	0:18	21.0	
17-Sep	6:18	21.1	
17-Sep	12:18	21.2	
17-Sep	18:18	20.9	
18-Sep	0:18	20.9	
18-Sep	6:18	21.1	
18-Sep	12:18	21.1	
18-Sep	18:18	20.9	
19-Sep	0:18	21.0	
19-Sep	6:18	21.2	
19-Sep	12:18	21.1	
19-Sep	18:18	21.1	

20-Sep	0:18	21.2
20-Sep	6:18	21.3
20-Sep	12:18	21.3
20-Sep	18:18	21.3
21-Sep	0:18	21.7
21-Sep	6:18	21.9
21-Sep	12:18	21.8
21-Sep	18:18	21.7
22-Sep	0:18	21.8
22-Sep	6:18	21.8
22-Sep	12:18	21.9
22-Sep	18:18	21.6
23-Sep	0:18	21.6
23-Sep	6:18	21.8
23-Sep	12:18	21.9
23-Sep	18:18	21.6
24-Sep	0:18	21.7
24-Sep	6:18	21.8
24-Sep	12:18	21.9
24-Sep	18:18	21.7
25-Sep	0:18	21.5
25-Sep	6:18	21.8
25-Sep	12:18	21.9
25-Sep	18:18	21.7

09/2 0:18 21.0

26-Sep	6:18	21.8	
26-Sep	12:18	21.9	
26-Sep	18:18	21.7	
27-Sep	0:18	21.7	
27-Sep	6:18	21.8	
27-Sep	12:18	21.9	
27-Sep	18:18	21.7	
28-Sep	0:18	21.7	
28-Sep	6:18	21.8	
28-Sep	12:18	21.9	
28-Sep	18:18	22.0	
29-Sep	0:18	22.3	
29-Sep	6:18	22.3	
29-Sep	12:18	22.3	
29-Sep	18:18	22.3	
30-Sep	0:18	22.3	
30-Sep	6:18	22.4	
30-Sep	12:18	22.4	
30-Sep	18:18	22.3	
1-Oct	0:18	22.3	
1-Oct	6:18	22.4	
1-Oct	12:18	22.5	
1-Oct	18:18	22.4	
2-Oct	0:18	22.4	

APPENDIX H

MAMMOTH CREEK STREAMFLOW

MAMMOTH COUNTY WATER DISTRICT

MAMMOTH CREEK @ OLD MAMMOTH ROAD

DAILY DISCHARGES IN CUBIC FEET PER SECOND

	1993			1994								
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.50	6.87	9.03	6.68	4.75	7.44	9.23	11.5	81.60	16.80	9.19	6.20
2	8.62	7.06	7.25	6.50	3.94	7.44	9.44	11.50	75.80	14.50	8.87	6.48
3	9.23	7.06	7.63	6.50	6.13	7.82	10.50	12.30	57.50	13.00	7.94	6.48
4	8.82	7.06	7.82	6.50	6.13	8.22	10.07	13.70	50.00	13.70	8.25	6.76
5	8.42	7.06	10.50	7.44	5.43	8.02	9.44	16.00	52.30	13.70	7.94	6.48
6	8.62	7.44	9.23	7.44	6.68	8.22	9.65	22.80	50.60	12.60	7.05	5.66
7	8.82	7.44	10.94	7.63	6.13	8.02	9.86	26.50	45.80	11.90	6.48	5.66
8	8.82	7.63	8.22	9.44	9.44	7.82	9.65	23.70	41.20	11.50	6.48	5.13
9	8.62	7.63	8.22	7.82	9.03	7.63	9.65	22.40	33.00	12.30	7.34	5.66
10	8.62	7.63	7.82	6.68	8.62	7.63	9.86	25.10	32.00	9.51	7.34	5.39
11	10.29	7.44	7.63	6.31	6.87	7.63	9.65	30.50	40.60	9.51	7.05	5.66
12	9.03	8.62	6.51	5.77	6.50	7.44	9.44	30.00	42.30	9.51	7.34	5.92
13	5.95	10.07	9.65	5.95	9.23	7.44	9.86	33.60	42.30	9.51	7.94	5.92
14	8.22	7.25	8.02	6.68	9.65	7.82	10.72	40.60	40.10	9.19	7.94	6.20
15	8.42	9.23	8.62	6.31	7.63	8.22	11.60	53.70	36.80	8.87	7.94	6.48
16	8.22	8.02	9.44	9.44	7.25	8.62	11.60	62.70	35.10	8.56	7.94	6.20
17	8.22	7.63	7.82	7.82	6.68	8.22	11.15	62.00	34.60	8.25	7.34	6.20
18	8.22	7.63	8.62	5.08	6.87	8.02	11.82	53.10	27.00	8.25	7.05	5.92
19	8.02	8.02	8.02	6.68	9.65	8.62	12.50	37.80	21.50	9.51	7.05	5.92
20	7.82	5.64	7.44	6.87	9.03	8.22	12.73	33.00	21.90	7.64	7.34	6.20
21	7.63	7.25	6.50	6.87	9.65	8.22	13.70	28.00	23.70	7.64	7.05	6.20
22	7.63	7.63	8.62	7.82	7.82	8.22	13.00	22.40	23.30	7.94	7.05	5.92
23	7.44	11.60	10.94	5.95	9.03	7.06	12.30	21.90	21.00	8.87	6.76	5.66
24	7.82	6.68	12.73	6.31	9.86	9.65	12.30	21.00	19.30	8.25	6.76	5.92
25	7.44	7.05	13.43	6.68	10.72	7.44	10.90	20.60	18.90	7.94	6.76	5.92
26	7.25	9.03	7.06	4.10	9.65	8.22	13.00	25.10	18.90	7.64	6.48	5.66
27	7.05	7.05	7.06	6.63	7.82	7.82	11.90	31.50	18.00	7.94	6.20	5.66
28	7.24	6.68	7.06	6.87	7.44	7.82	11.50	31.00	18.00	7.05	6.48	5.66
29	7.24	7.06	6.87	5.43		8.22	11.50	34.10	16.40	7.34	6.48	9.51
30	6.68	9.65	6.87	6.31		8.42	11.90	47.60	16.80	8.56	6.48	8.25
31	7.06		6.68	4.26		9.23		64.70		9.19	6.48	
MEAN	8.16	7.74	8.46	6.67	7.77	8.03	11.01	31.30	35.21	9.89	7.25	6.16
MAXIMUM	11.50	11.60	13.43	9.44	10.72	9.65	13.70	64.70	81.60	16.80	9.19	9.51
MINIMUM	5.95	5.64	6.50	4.10	3.94	7.06	9.23	11.50	16.40	7.05	6.20	5.13