RICHARD C. SLADE & ASSOCIATES
CONSULTING GROUNDWATER GEOLOGISTS

February 20, 1998

Mr. Gery Anderson
Anderson Consulting Group
360 Idaho Maryland Rd.
Grass Valley, CA 95945

Job S9763

Re: Final Report: Summary of Results
Aquifer Testing, Squaw Valley
Placer County, California

Dear Mr. Anderson:

Presented herein is our Final Report regarding the results of our aquifer testing of two water wells in Squaw Valley, Placer County, California. The two wells in which aquifer tests were conducted include: Squaw Valley Public Service District (SVPSD) Well No. 2, and Squaw Creek Resort Golf Course (SCRGC) Well No. 18-3. Figure A – Well Location Map – illustrates the approximate locations of the various wells discussed in this report.

This Final Report, which supersedes our preliminary report transmitted to you on December 29, 1997, represents the completion of aquifer testing as outlined in Subconsultant Agreement, Attachment "A" Scope of Work dated December 1, 1997, for the Squaw Valley Public Service District (formerly known as the Squaw Valley County Water District). Comments to our Preliminary Draft Report, as developed during our joint meeting with the District and interested parties in Squaw Valley on January 26, 1998, have been incorporated into this Final Report.

Purposes of the Aquifer Tests

The overall purposes of conducting the aquifer tests included: to ascertain whether or not both pumping wells could sustain pumpage continuously for a 24-hour period; to assess the amounts of water level drawdown created in each pumping well during the test; to monitor nearby wells for possible water level drawdown interference induced by each pumping well during the test; and to utilize the monitored water level data to calculate transmissivity of the aquifer(s) penetrated by each pumping well.

For the tests described herein, water level monitoring was performed utilizing our in-house electric tape water level sounders. These devices, which we have used on at least 100 prior aquifer tests, can be used in conjunction with an engineer's measuring tape for interpolation between markers, to obtain an accuracy of approximately 0.01 ft. All wrist watches were synchronized to obtain time-accurate water level measurements, and a stop watch was used for the early-time measurements at the pumping well.

Well Selection

Aquifer Test of SVPSD Well No. 2.

Due to the time constraints for the first test, Squaw Valley Public Service District (SVPSD) Well No. 2 was selected as the pumping well because:

1. It has an operational pump.
2. It is considered to have the highest pumping capacity of any of the nearby wells and, hence, it would be the optimum well to use at this time to try to stress the aquifer.
3. Its flow meter was reportedly accurate.
4. There is easy access into the well for water level monitoring equipment.
5. Important data are readily available for the well (such as its depth, perforation intervals, date of construction, and driller's log of drill cuttings).
6. It is surrounded by other municipal-supply wells that could be used as water level monitoring wells during the pumping of Well No. 2. This latter fact is optimal during aquifer tests because it is advantageous to utilize a pumping well that has observation wells located at different distances and at various directions from the pumping well (see Figure A).
7. SVPSD personnel were willing and able to easily discharge the groundwater extracted from this well during the test to a nearby storm drain.

During the aquifer test, water level monitoring was also conducted in nearby SVPSD Well Nos. 1, 3, 4, and 5 and in nearby Squaw Valley Mutual Water Company Well No. 1 (see Figure A).

Aquifer Test of SCRGC Well No. 18-3.

At the Squaw Creek Resort, there are three active water wells located in and near the golf course along the floor of Squaw Valley. Based on discussions with personnel from the Resort, review of on-site logistics, and ease of access to the wellheads, it was decided to use SCRGC Well No. 18-3 as the pumping well. The only relatively nearby well, SCRGC Well No. 18-2, was used as a water level monitoring well during the aquifer test of Well No. 18-3.

Other Factors

Two other important factors were considered while evaluating the logistics for the aquifer tests. These factors were:

1. Time was of the essence. It was important for the clients to conduct the tests as soon as possible, hopefully before any significant rainfall, so that the test results might be indicative of the low water level time of the year.
2. The wells would be tested in the "as-is" condition even though neither of the pumping wells had been rehabilitated since the date of their original construction.

Assumptions During Aquifer Tests

Implicit in the equations used for the analytical solutions of water level data obtained during aquifer tests, there are several assumptions in regard to the aquifer and the pumping well. These aquifer test assumptions, which are provided in most published hydrogeologic text books, include:

1. The aquifer is homogenous and isotropic.
2. The aquifer has infinite area extent.
3. The transmissivity of the aquifer is constant at all times and at all places.
4. Groundwater removed from aquifer storage during pumping is discharged instantaneously with decline in head.
5. The well fully penetrates and receives groundwater from the entire thickness of the aquifer.
6. The well has an infinitesimally small diameter.

Obviously, at least the first four of these assumptions are never met in nature. Number 5 is frequently not met in many aquifer tests; whereas, assumption No. 6 is the only one that is met reasonably well during most aquifer tests. Regardless, conducting aquifer tests in water wells is a very common occurrence in hydrogeology and such tests, even with the seemingly restrictive assumptions used for quantitative solutions of the resulting water level drawdown data, still represent the principal method for evaluation well yields, water level drawdown interference, spacing criteria between existing and future wells, and in identifying the magnitude of aquifer transmissivity.

Aquifer Boundary Conditions

Graphical solutions to the water level data collected over time during aquifer tests involve the use of a "type curve" to help solve the analytical equations. Divergence of the field-generated data for water levels versus time from the "type curve" indicates that the aquifer being tested may not meet some or all of the assumptions used for the equations. Assumption No. 2 listed above, regarding the infinite areal extent of the aquifer, is essentially never met. This is because all aquifers have boundaries which limit their lateral and/or vertical extent. For the Squaw Valley area, recharge boundaries are important.

Hydraulically, aquifer boundaries consist of two types: recharge (or positive) boundaries and impermeable (or negative) boundaries. Examples of recharge boundaries include an aquifer that lies sufficiently close to a lake or perennial stream so that the aquifer is or can become in hydraulic contact/communication with that body of water. Pumping a well near a body of water with which it is in hydraulic communication allows the water body to literally lose water to the aquifer via deep percolation. Less water level drawdown than expected will tend to occur in wells impacted by recharge boundaries because of the recharge from the water body that is induced into the aquifer as pumping continues.

Examples of impermeable boundaries include an aquifer that is terminated against an impermeable barrier such as an outcrop of bedrock or a fault. Pumping a well near an impermeable barrier will result in more water level drawdown than expected in nearby wells because not enough recharge is flowing in toward the pumping well from the area of the impermeable boundary.

Squaw Valley Public Service District Well No. 2 Aquifer Test Results

Summary of Test Parameters and Results in SVPSD Well No. 2

Date(s) of Test;	December 2-3, 1997
Duration of Drawdown Test:	24 hours (1440 minutes)
Average Pumping Rate:	406 gallons per minute (gpm)
Initial Static Water Level:	16.04 ft below reference point (brp)
Final Measured Pumping Water Level (at 1422 min):	39.4 ft brp
Drawdown (at 1422 min):	23.36 ft
Specific Capacity:	17.38 gpm/foot drawdown at test end
Duration of Recovery Test:	3 hours (180 minutes)
Distance to Squaw Creek:	Approximately 300 ft.

All measured water levels for SVPSD No. 2 (pumping well) and for the observation wells are tabulated and presented in Table 1 - Field Water Level Measurements, Test of December 2-3, 1997. The table also lists the reference point for each well above ground surface, and the approximate radial distances and general directions of each observation well from the pumping well. Figures 1 through 6 are the plots of the Table 1 results for each well. On that table and those figures, the SVPSD wells are still denoted by the former name of the District, *i.e.*, the Squaw Valley County Water District. The approximate locations of the monitored wells are shown on Figure A.

By prior arrangements with personnel from SVPSD and Squaw Valley Mutual Water Company (SVMWC), none of their local wells had been pumped for any purpose for at least 24 hours prior to commencing the aquifer test described herein.

Results of the Constant Rate Discharge Testing

Measurements were collected in the SVPSD Well No. 2 (pumping well) and in the five nearby observation wells (SVPSD Well Nos. 1, 3, 4, 5 and SVMWC Well No. 1). For these observation wells, the water-level drawdown measurements have been plotted for only one of the wells because only this one observation well exhibited any obvious impact from pumping of SVPSD Well No. 2. That well for which water-level drawdown data are graphed is SVPSD Well No. 4, and it is located approximately 172 feet north of SVPSD Well No. 2. Water levels in the other observation wells either remained the same and/or rose slightly throughout the entire duration of pumping from SVPSD Well No. 2.

SVPSD Well No. 5 also appeared to exhibit some limited drawdown interference. However, this interference was minor (less than 0.15 ft) and did not continue throughout the 24-hour drawdown test. After approximately 100 minutes, water levels began to rise in Well No. 5, eventually reaching levels that were actually above the initial static water level in that well.

Based on the results of water level measurements, analysis of only the measurements in SVPSD No. 4 observation well and recovery data from SVPSD Well No. 2 could be performed.

Figures 7 through 9 show the results of applying appropriate mathematical solutions, through computer curve-fitting, of the data from SVPSD Well No. 2 and 4. The results of the curve-fitting reveal the following:

Figure 7 - Theis curve fit to drawdown measurements in SVPSD No. 4. The curve was fit to the group of data points prior to 100 minutes. The resulting transmissivity (T), 1,118,000 gpd/ft is extremely high. Such T values

are typically observed in wells located near streams/rivers and represent the recharge influence of the stream on the local aquifer.

After 100 minutes, the amount of drawdown decreases and the drawdown values fluctuate with time. The change after approximately 100 minutes appears to represent a boundary condition occurring after that time; the most likely boundary condition is the infiltration of stream water into the aquifer at that point.

Figure 8 - Cooper-Jacob curve fit to recovery water level measurements in SVPSD Well No. 2 which represent later time measurements (*i.e.*, after the aquifer is being recharged). A curve-fit to those later-time measurements results in a calculated T value of 775,300 gpd/ft. This value is also anomalously high due to recharge to the aquifer system from the nearby creek.

Figure 9 - Distance-Drawdown graph on only two points near the end of pumping in SVPSD Well No. 2, as shown on the figure. Calculation of a T value yields 24,600 gpd/ft. This low value is caused by a deep pumping level in SVPSD Well No. 2 and by a relatively small drawdown value in SVPSD Well No. 4. However, the amount of water level drawdown created by pumpage from Well No. 2 on Well No. 4 is artificially low due to the recharge effects of Squaw Creek which is located within the zone of pumping influence of Well No. 2.

In this instance, the amount of water level drawdown in Well No. 4 is less than it would normally be were it not for the presence of surface water runoff in the nearby reach of Squaw Creek. During this aquifer test, runoff in the creek at a location just north of Well No. 4 was estimated to be approximately 6.2 cubic feet per second (about 2800 gpm), based on estimates of flow width, flow depth, and flow velocity (and calculations using the Darcy equation). At certain other times of the year, if there were no flow in this portion of the creek, the calculated values of transmissivity would tend to be lower than the 775,000 to 1,118,000 gpm/ft value listed above.

Because of the relatively low pumping rate in the No. 2 well (406 gpm) compared to the amount of stream runoff on the day of the test (2800 gpm), no changes (reductions) in the runoff could be observed during the aquifer test.

Squaw Creek Resort Golf Course
Well No. 18-3 Aquifer Test Results

Summary of Test Parameters and Results in Squaw Creek Resort Golf Course Well No. 18-3

Date(s) of Test;	December 3-4, 1997
Duration of Drawdown Test:	23 hours (1380 minutes)
Average Pumping Rate:	266 gallons per minute (gpm).
Initial Static Water Level:	13.37 ft below reference point (brp)
Final Measured Pumping Water Level (at 1380 min):	35.19 ft brp
Drawdown (at 1380 min):	21.82 ft
Specific Capacity:	12.19 gpm/foot drawdown.
Distance to Squaw Creek:	600 to 800 ft

All measured water levels for Golf Course Well No. 18-3 and its observation well 18-2 are tabulated and presented in Table 2 - Field Water Level Measurements, Test of December 4-5, 1997. The table also lists the distances of the reference point above ground and the approximate radial distances of the observation well from the pumping well. The water level drawdown portion of the aquifer test was terminated one hour early and no subsequent recovery water level measurements were collected from Well No. 18-3, due to the onset of a heavy snow-storm on the morning of December 4, 1997.

By prior arrangements with personnel from the Resort, none of their local wells had been pumped for any purpose for at least 24 hours prior to commencing the aquifer test described herein.

Results of the Constant Rate Discharge Testing

During the test, water level measurements were collected in Well No. 18-2 and No. 18-3, the latter being the pumping well for this aquifer test. The water-level measurements in each of those wells have been plotted on Figures 10 and 11, respectively. The approximate locations of these two wells are shown on Figure A.

The graphs for this aquifer test show that there was no water level impact (drawdown interference) in observation Well No. 18-2 as a result of 23 hours of continuous pumpage from Well No. 18-3. As a result, mathematical curve-fitting solutions could only be applied to the measured water levels for Well No. 18-3. It should be noted that after 23 hours of continuous pumping in Well No. 18-3, water levels never stabilized in this well.

Figures 12 through 14 show the results of applying appropriate mathematical solutions, through computer curve-fitting, of the data from the aquifer test in Well 18-3. The results of the curve-fitting are as follows:

Figure 12 - Theis curve fit to water level drawdown measurements in Well 18-3. The curve was fit to the group of points after 10 minutes of pumping. The resulting T value, 3,700 gpd/ft is extremely low. Such T values are indicative of sediments/material with low permeability and/or bedrock-type materials.

Figure 13 - Cooper-Jacob curve fit to water level drawdown measurements for Well 18-3 in the early time period (prior to 10 minutes of continuous pumping). A computer curve-fit to these measurements is designated by the slope T_1. A T value of 8450 gpd/ft was obtained for that slope. T values for the early time period are not, generally, representative of long-term aquifer conditions.

Figure 14 - Cooper-Jacob curve fit to drawdown measurements for Well 18-3, in the later time period (after 10 minutes). A computer curve-fit to these measurements is designated by the slope T_2. A T value of 3700 gpd/ft was obtained for that slope. T values from the later time period are more representative of actual T values.

Measurement of Field Water Quality Parameters

Table 3 - Field Water Quality Measurements During Aquifer Testing - shows the results of measuring the field water-quality parameters of temperature (°F) and electrical conductivity (EC) in units of micromhos per centimeter (μmhos/cm) in each of the pumping wells during aquifer testing. Figures 15 and 16 are plots of Table 3 data for SVPSD Well No. 2 and Golf Course Well No. 18-3, respectively. The following is summarized from Table 3 and Figures 15 and 16:

SVPSD Well No. 2

- In SVPSD Well No. 2 the temperature readings of groundwater collected during pumping ranged from 44.3°F, at the beginning of the aquifer test, to 45.5 °F, near the end of the test. The temperature appeared to stabilize after approximately 100 minutes (see Figure 15).

- The EC for groundwater pumped from SVPSD Well No. 2 ranged from 135 μmhos/cm, at the beginning of the aquifer test, to 113 μmhos/cm, near the end of the aquifer test. The EC values clearly decreased with duration of pumping and appeared to stabilize after approximately 983 minutes (approximately 16½ hours).

Creek Measurements Near SVPSD Well No. 2

- The EC measurements of surface water samples collected in the nearby portion of Squaw Creek, at the beginning of the aquifer testing, were on the order of 92 μmhos/cm. Thus, the recorded EC measurements from the discharge of SVPSD Well No. 2, which were observed to decrease in magnitude during the pumping portion of the test, began to approach the EC values of surface water in the creek, towards the end of this aquifer test. It is very common that surface water runoff has a lower conductivity (and, hence, lower total dissolved solids concentration) than the local groundwater. This is because percolating groundwater moving laterally and/or vertically through sedimentary materials picks up various mineral constituents from the soil particles. The decline in the EC measurements from Well No. 2 suggest that the creek may be recharging the aquifer system during the pumping portion of the aquifer test in SVPSD Well No. 2.

- It is also noteworthy that during this test, the depth below grade of the surface water in the nearby reach of Squaw Creek was estimated to be above (*i.e.*, higher than) the depth to groundwater in the nearest wells (SVPSD Nos. 2 and 4). This suggests, at least for certain times of the year, that the creek is directly recharging the groundwater in the area.

Squaw Creek Resort Golf Course Well No. 18-3

- In Well No. 18-3, the temperature of the groundwater collected during pumping ranged from 42.5°F, at the beginning of the aquifer test, to 43.9°F near the end of the test. The temperature appeared to remain constant during the entire test.

- The EC for water samples collected from the discharge ranged from 210 μmhos/cm at the beginning of the aquifer test, to 223 μmhos/cm, near the end of the aquifer test. The EC measurements appeared to stabilize after approximately 630 minutes (approximately 16½ hours).

Creek Measurements Near Golf Course Well No. 18-3

- The EC measurements on a surface water sample collected in nearby Squaw Creek at the beginning of the aquifer testing in Well 18-3 was on the order of 127 μmhos/cm. The EC measurements from the discharge of

Well No. 18-3 differed significantly from that in the creek, indicating that the creek did not recharge, and hence did not impact the pumping water levels in Well No. 18-3 during this 23-hour pumping period.

Preliminary Conclusions

Based on the results of aquifer testing, the following preliminary conclusions are provided:

1) Based on water level drawdown measurements collected during the aquifer (pumping) test of SVPSD Well No. 2, it is apparent that a hydrogeologic flow boundary was encountered. In this particular case, the flow boundary is known as a positive (recharge) boundary because the aquifer system being pumped by Well No. 2 was being recharged during the pumping period of the test. In essence, the graph of water levels versus time diverges greatly from the "type curve," because less water level drawdown than expected was detected.

2) Among the possible causes for creating positive boundaries in groundwater basins are the following conditions:

   a. The existence of a nearby lake, creek or perennial stream. This is a distinct possibility for the aquifer test on SVPSD Well No. 2, particularly because Squaw Creek was flowing at the time of the test and because it is known that prior to construction activities in the late-1950s for Olympic Village, the original course of the native creek channel was south of its present course (and, hence, even closer to Well No. 2).

   b. Infiltration of the pumped groundwater back into the aquifer. Groundwater from this aquifer test was diverted into a nearby storm drain which then reportedly discharged the water into a sand filter bed beneath the parking lot. Although the exact location, size, areal extent and depth of this filter bed are not known, the bed probably does not extend to the depths of the existing water table; furthermore, the bed likely is located at some distance to the north-east/east of Well No. 2. Hence, although this mechanism is a possibility for creating a positive boundary, it is not considered to be a major contributor in this case.

   c. Leakage from adjacent aquifers through confining clay layers which either overlie or underlie the aquifer(s) penetrated by the pumping well. Although this is a possible mechanism, it is not likely the main cause of the recharge for this aquifer test.

d. Increase in thickness of the producing aquifers and/or increase in the permeability of these aquifers. This is also a distinct possibility for the aquifer test on SVPSD Well No. 2 because glacial sediments which underlie the valley floor are typically recognized as displaying large and frequent changes in the thickness and granularity of individual layers which comprise such sediments.

   Moreover, it is known that the former creek channel of Squaw Creek (prior to construction of Olympic Village in the late-1950's) was located much closer to Well No. 2 than is the present re-aligned channel. Former creek channels contain coarse-grained sediments.

   It is even possible that the excavations in the late-1950's to create the existing creek channel were cut down into a layer of coarse-grained, permeable sediments, and that this layer has direct continuity to those permeable strata of the former (original) creek channel that was closer to Well No. 2 but is now buried beneath the parking lot.

e. Cessation of discharge from a nearby well. Because all wells in proximity were shut off at least one day prior to commencing the test on Well No. 2 and because water levels tend to recover relatively quickly in this area, this potential recharge boundary mechanism is not very likely for this aquifer test.

f. Recharge effects from a nearby injection well. There are no known injection wells in the region and, thus, this mechanism is not an issue for the SVPSD Well No. 2 aquifer test.

3) Hence, the principal potential causes of the positive recharge boundary for the Well No. 2 aquifer test are conditions 2a and/or 2d, above. Condition 2c above cannot be wholly dismissed either. Condition 2b has only a very slight chance of being a contributor.

   Thus, for simplicity, we shall conclude that a positive recharge boundary was encountered during the aquifer test of Well No. 2. In our opinion, this single, relatively short test of Well No. 2 could not conclusively prove that the existing creek is the boundary source, and hence, it is not known for certain that the creek directly recharged this well during the test.

Additional aquifer testing in this area will be necessary to more completely stress the aquifer system.

4) During the recent test, the zone of pumping influence (the cone of drawdown) surrounding Well No. 2 began to grow as soon as pumping was initiated; this drawdown cone continued to expand to greater distances as pumping continued. Within a very short time, however, this cone of depression reached the nearby stream, *i.e.*, the positive recharge boundary, and this induced infiltration (recharge) of the creek runoff into the aquifer. Hence, even with continued pumping, no further water level drawdown was created in Well No. 2.

Further evidence to corroborate the infiltration and recharge of stream water into the local aquifer system near SVPSD Well No. 2 includes:

a. The EC of the groundwater declined during the pumping test and began to approach the magnitude of the EC of the surface water in Squaw Creek.

b. A water level stabilization effect (*i.e.*, no continued water level drawdown) was detected during monitoring of SVPSD Well No. 4. This well lies between Well No. 2 and the present channel of Squaw Creek.

5) Transmissivities (T) in the aquifer sediments in the vicinity of Squaw Creek are high. Although the test results show T values on the order of 775,000 gpd/ft or more, such calculated values appear to have been influenced by recharge from the creek; actual transmissivities are much lower. Data from previous aquifer testing (performed by Kleinfelder) on SVPSD Well No. 4 suggest a transmissivity of approximately 327,000 gpd/ft. Although not described in that 1989 Kleinfelder report, water level data from the aquifer test in this well was very likely impacted by recharge from the creek because this well lies even closer to Squaw Creek than Well No. 2 which was recently tested during our work.

6) A T value representative of aquifer conditions from data during aquifer testing of Squaw Creek Resort Well No. 18-3 is approximately 3700 gpd/ft. This value is considerably lower than values obtained during aquifer testing of the alluvial sediments in the vicinity of SVPSD Well No. 2. The calculated T value from Well 18-3 indicates geologic media with a relatively low permeability (*i.e.* the sediments here are finer-grained). No

boundary effects are noted in the water level data obtained during the aquifer test of Well No. 18-3.

7) Geologically, SVPSD Well No. 2 is located approximately 300 ft from Squaw Creek and within alluvial/glacial sediments of the valley which have high permeability and which have the potential of being hydraulically connected to the creek. On the other hand, Well No. 18-3 is located at a distance greater than 600 ft from the creek and obtains its water supply from aquifer materials having lower permeability; the combined thickness of aquifer materials encountered in this area is also very likely thinner than that near the SVPSD wells to the west.

   The source of water for Well No. 18-3 is from storage in the aquifer(s) encountered at the well. There is no evidence for a recharge boundary, as might occur from the creek. This seems to be supported by the well not inducing any drawdown in Observation Well 18-2, which is relatively close to Squaw Creek (approximately 200 ft), and because EC measurements of the discharge from Well No. 18-3 differ significantly, in magnitude, from that in the creek.

8) There are no nearby stream gages and/or weirs in the creek channel to permit accurate determination of instantaneous stream runoff. Due to the nature of the field methods utilized to estimate the amount of runoff in nearby Squaw Creek, it was not possible to discern a detectable decrease in the creek flow rate as a result of the pumping for the aquifer test of Well No. 2.

9) It is recommended that future aquifer testing in this area be performed to better stress the local aquifer system. This would include, among other items, the following: the simultaneous pumping of several of the municipal-supply wells in this area; use of accurate flow meters; discharge of the pumped groundwater via temporary piping for a distance of several hundreds of feet to the east; the monitoring of water levels in all the nearby wells; conducting the test for a period of at least five days or more; temporarily installing two or more weirs along the nearby channel of Squaw Creek; and performing the test in October or November of the year (and prior to significant rainfall).

   During the recommended test, the field water quality parameters of EC and temperature should be obtained regularly on a time series basis from each well; the complete water quality of the surface water runoff should be determined; and several additional water quality constituents should be tested for on a time series basis in the discharged water from each of the pumping wells. These latter data can then be compared to the quality of the surface water runoff.

Very truly yours,
RICHARD C. SLADE & ASSOCIATES

Richard C. Slade
Registered Professional Hydrogeologist
American Institute of Hydrology No. 106

Attachments

TABLE 1
Field Water Level Measurements
Squaw Valley County Water District Aquifer Testing
December 2-3, 1997

Elapsed Time from Start of Pumping in SVCWD Well No. 2[1] (min)	Measured Depth to Water in Observation Well SVCWD No. 1[2] (ft)	Elapsed Time from Start of Pumping in SVCWD No. 2[1] (min)	Measured Depth to Water in Pumping Well SVCWD No. 2[2] (ft)	Elapsed Time from Start of Pumping in SVCWD Well No. 2[1] (min)	Measured Depth to Water in Observation Well SVCWD No. 3[2] (ft)	Elapsed Time from Start of Pumping in SVCWD Well No. 2[1] (min)	Measured Depth to Water in Observation Well SVCWD No. 4R[2] (ft)	Elapsed Time from Start of Pumping in SVCWD Well No. 2[1] (min)	Measured Depth to Water in Observation Well SVCWD No. 5[2] (ft)	Elapsed Time from Start of Pumping in SVCWD Well No. 2[1] (min)	Measured Depth to Water in Observation Well Mutual No. 1[2] (ft)
0	15.34 (SWL*)	0	16.04 (SWL*)	0	13.28 (SWL*)	0	17.14 (SWL*)	0	13.13 (SWL*)	0	12.97 (SWL*)
35	15.4	1	39.37	29	13.35	1	17.37	17	13.14	25	12.93
73	15.41	2	39.85	63	13.36	3	17.54	53	13.16	58	12.96
120	15.4	3	39.37	112	13.33	5	17.54	95	13.15	100	12.97
158	15.41	4	39.27	152	13.34	7	17.56	140	13.12	146	12.93
212	15.41	5	*	207	13.29	10	17.57	195	13.13	199	12.93
285	15.42	6	39.28	280	13.27	17	17.6	267	13.1	274	12.93
353	15.4	8	*	367	13.28	23	17.64	332	13.05	339	12.97
413	15.41	10	39.32	405	13.23	47	17.63	390	13.05	398	12.91
492	15.45	13	39.36	486	13.23	83	17.67	476	13.06	482	12.93
604	15.43	19	39.39	599	13.2	130	17.65	574	13.07	582	12.84
703	15.38	20	*	695	13.14	166	17.64	672	13.1	673	12.88
787	15.39	22	39.32	780	13.2	218	17.64	755	13.01	763	12.87
886	15.37	26	*	865	13.16	295	17.62	844	13	847	12.88
965	15.36	29	39.46	957	13.19	367	17.6	933	13.05	937	12.87
1060	15.37	42	39.37	1050	13.25	420	17.61	1022	13.04	1033	12.86
1148	15.36	78	39.32	1135	13.23	504	17.63	1118	13.03	1114	12.87
1231	15.38	97	39.37	1221	13.25	623	17.63	1203	13.03	1199	12.87
1309	15.41	100	*	1304	13.24	711	17.61	1294	13.01	1289	12.88
1374	15.41	105	*	1368	13.21	793	17.66	1353	13	1348	12.86
1418	15.36	125	39.36	1415	13.2	892	17.63	1408	13.06	1404	12.82
1495	15.32	126	39.31	1440	*	973	17.63	1477	12.99	1484	12.86
1524	15.31	163	39.31	1491	13.1	1066	17.66	1509	12.95	1513	12.81
1553	15.27	212	39.35	1518	13.11	1154	17.65	1542	12.96	1546	12.81
1611	15.28	290	39.1	1550	13.12	1235	17.68	1596	12.97	1602	12.84
		357	39.14	1607	13.11	1314	17.61				
		416	39.21			1382	17.62				
		497	39.08			1422	17.6				
		617	39.06			1458	17.17				
		717	39.25			1462	17.15				
		800	39.26			1472	17.13				
		897	39.24			1503	17.11				
		978	39.23			1534	17.11				
		1071	39.23			1564	17.11				
		1164	39.25			1597	17.11				
		1239	39.23								
		1318	39.28								
		1377	39.23								
		1422	39.4								
		1442	16.31								
		1444	16.18								
		1446	16.15								
		1448	16.13								
		1450	16.13								
		1455	16.12								
		1460	16.11								
		1465	16.09								
		1470	16.08								
		1500	16.05								
		1530	16.045								
		1560	16.03								
		1590	16.03								
		1620	16.03								

NOTES: (1) = Approximate pumping rate at end of aquifer test = 406 gallons per minute.
Total duration of pumping was 1440 minutes (24 hours).
Recovery measurements collected after this period, in each well.
(2) = Measured depth below test reference point (rp).
The test reference points are listed as follows:
SVCWD Well No. 1: grade level
SVCWD Well No. 2: 1.8 ft above grade level
SVCWD Well No. 3: grade level
SVCWD Well No. 4R: 1.72 ft above grade level
SVCWD Well No. 5: 0.75 ft above grade level
Mutual Water No. 1: 3.6 ft above grade level

Approximate radial distances from pumping well (SVCWD No. 2) to observation wells are listed as follows:

SVCWD Well No. 1: 340 ft to the southeast
SVCWD Well No. 3: 410 ft to the east
SVCWD Well No. 4R: 172 ft to the north
SVCWD Well No. 5: 520 ft to the east
Mutual Water No. 1: 540 ft to the east

*SWL = Measured static water level prior to pump startup in SVCWD Well No. 2.

Well No. 4 also known in data base as Well No. 4R.

TABLE 2
Field Water Level Measurements
Squaw Creek Resort Golf Course Aquifer Testing
December 4-5, 1997

Elapsed Time from Start of Pumping[(1)] (min)	Measured Depth to Water in Pumping Well Golf Course No. 18-3[(2)] (ft)	Elapsed Time from Start of Pumping in Golf Course Well No. 18-3[(1)] (min)	Measured Depth to Water in Pumping Well Golf Course No. 18-2[(2)] (ft)
0	13.37 (SWL*)	0	10.65
2	18.74	34	10.65
4	19.52	65	10.61
6	20.12	97	10.62
8	20.48	124	10.58
10	20.57	154	10.62
15	21.61	186	10.62
20	22.19	220	10.64
25	22.55	247	10.63
30	23.12	305	10.63
40	23.91	365	10.63
50	24.54	426	10.63
60	25	488	10.66
70	25.62	546	10.72
80	25.98	607	10.71
90	26.47	666	10.76
100	26.74	727	10.71
110	27.14	785	10.7
120	27.28	843	10.71
130	27.74	905	10.68
140	28	965	10.69
150	28.2	1025	10.72
180	28.84	1085	10.69
215	29.53	1146	10.68
240	29.87	1206	10.64
270	30.38	1264	10.64
300	30.63	1323	10.63
330	30.81		
360	30.97		
390	31.13		
420	31.26		
450	31.38		
480	31.52		
510	31.7		
540	31.79		
570	31.95		
600	32.12		
630	32.36		
660	32.5		
690	32.66		
720	32.81		
750	32.94		
780	33.07		
810	33.22		
840	33.37		
870	33.49		
900	33.65		
930	33.77		
960	33.87		
990	33.99		
1020	34.06		
1050	34.17		
1080	34.26		
1110	34.32		
1140	34.41		
1170	34.52		
1200	34.59		
1230	34.72		
1260	34.84		
1290	35.03		
1320	35.11		
1350	35.14		
1380	35.19		

NOTES:

(1) = Approximate pumping rate at end of aquifer test = 266 gallons per minute.
Total duration of pumping was 1382 minutes (approx. 23 hours).
No recovery measurements collected in each well.

(2) = Measured depth below test reference point (rp).
The test reference points are listed as follows:
Well 18-3 = 0.85 ft above ground level
Well 18-2 = 1.15 ft above ground level

*SWL = Measured static water level prior to pump startup in Well No.18-3.

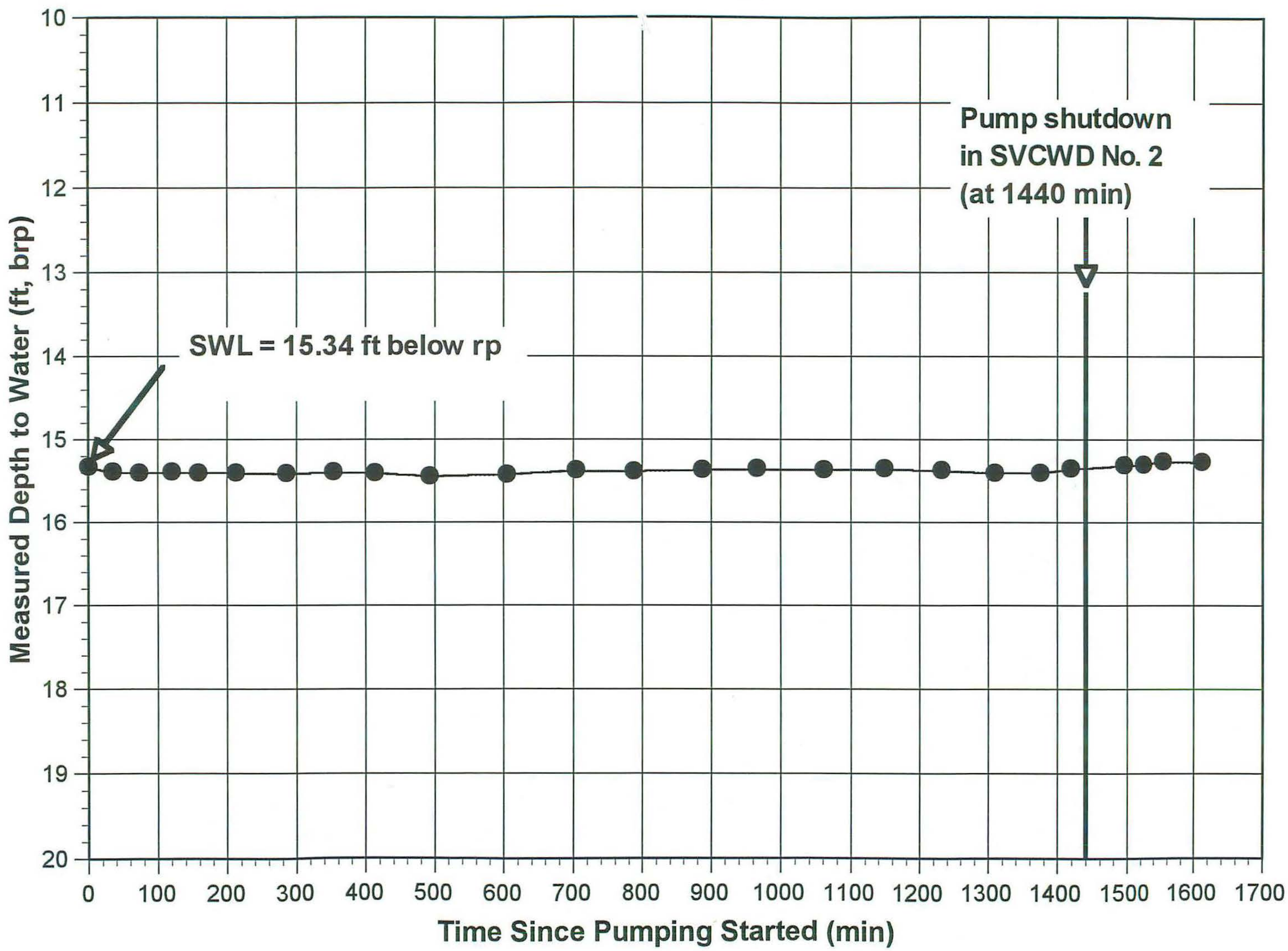
TABLE 3
Field Water Quality Measurements
During Aquifer Testing
Squaw Valley County Water District and Squaw Creek Resort

Squaw Valley County Water District Well No. 2 December 2-3, 1997			Squaw Creek Resort Golf Course Well No. 18-3 December 4-5, 1997		
Elapsed Time from Start of Pumping (min)	Temperature (°F)	Electrical Conductivity (umhos/cm)	Elapsed Time from Start of Pumping (min)	Temperature (°F)	Electrical Conductivity (umhos/cm)
0	ND	ND	0	ND	ND
8	44.3	135	23	42.5	210
26	44.3	124	49	43.1	212
100	45.8	126	146	43.4	223
215	45.3	112	227	43.5	226
300	45.4	118	337	43.8	227
630	44.6	115	454	42.6	223
804	45	114	577	41.5	220
983	45.2	111	695	42.8	224
1169	44.9	111	817	43.2	225
1401	45.2	113	936	43.5	224
1377	45.5	113	1056	43.8	224
1428	45.5	113	1177	44	224
			1294	44.5	223
			1377	43.9	223

NOTES: ND = No Data, Start of Pumping

FIGURE 1

Measured Water Levels During Aquifer Testing
Squaw Valley County Water District (SVCWD) Well No. 1
(Observation)



Reference point (rp) = grade surface
Pumping rate in SVCWD No. 2 = 406 gpm
Distance to SVCWD No. 2 = 340 ft (approx.)

FIGURE 2

Measured Water Levels During Aquifer Testing

Squaw Valley County Water District (SVCWD) Well No. 2

(Pumping Well)

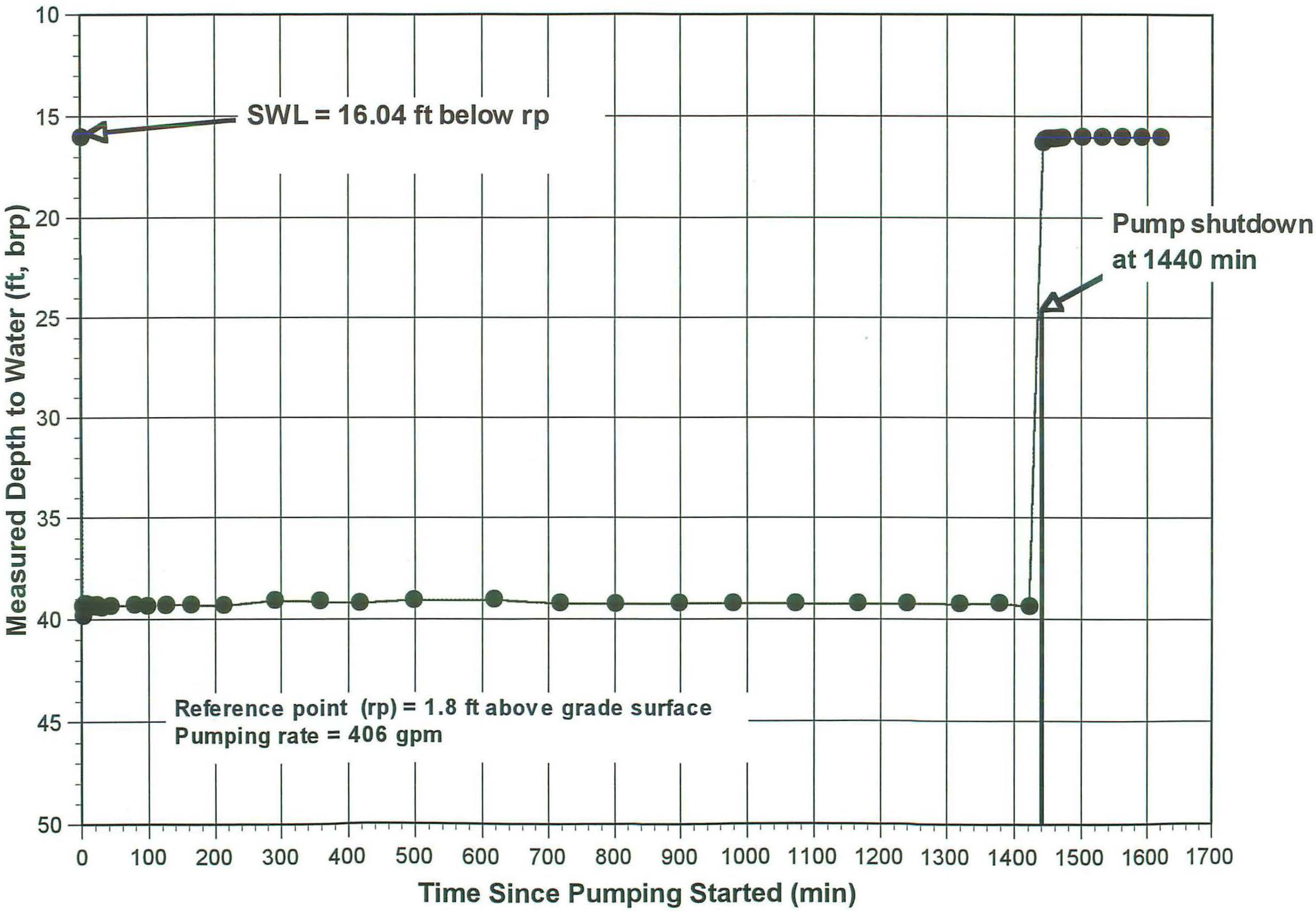


FIGURE 3
Measured Water Levels During Aquifer Testing
Squaw Valley County Water District (SVCWD) Well No. 3
(Observation)

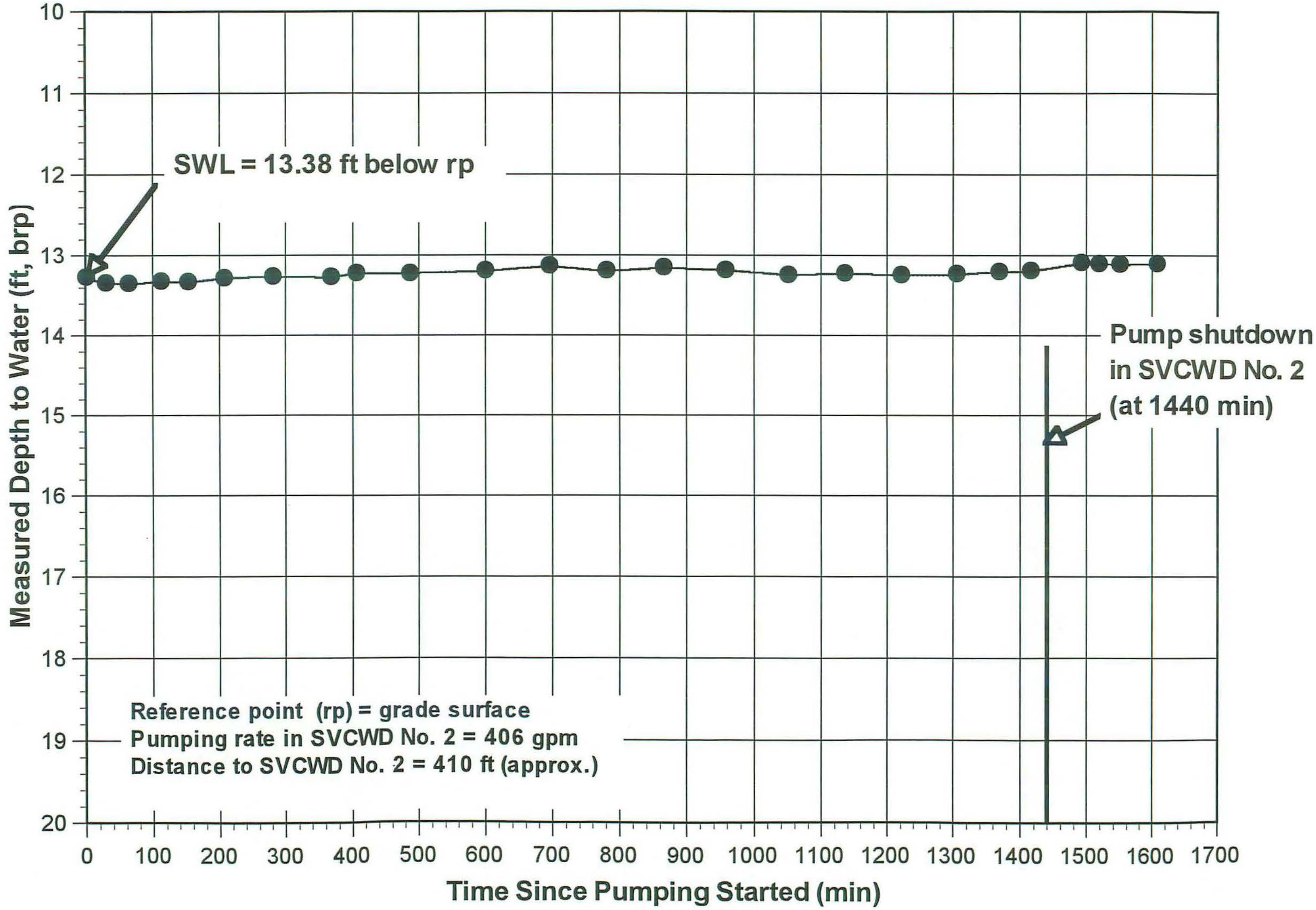


FIGURE 4

Measured Water Levels During Aquifer Testing

Squaw Valley County Water District (SVCWD) Well No. 4

(Observation)

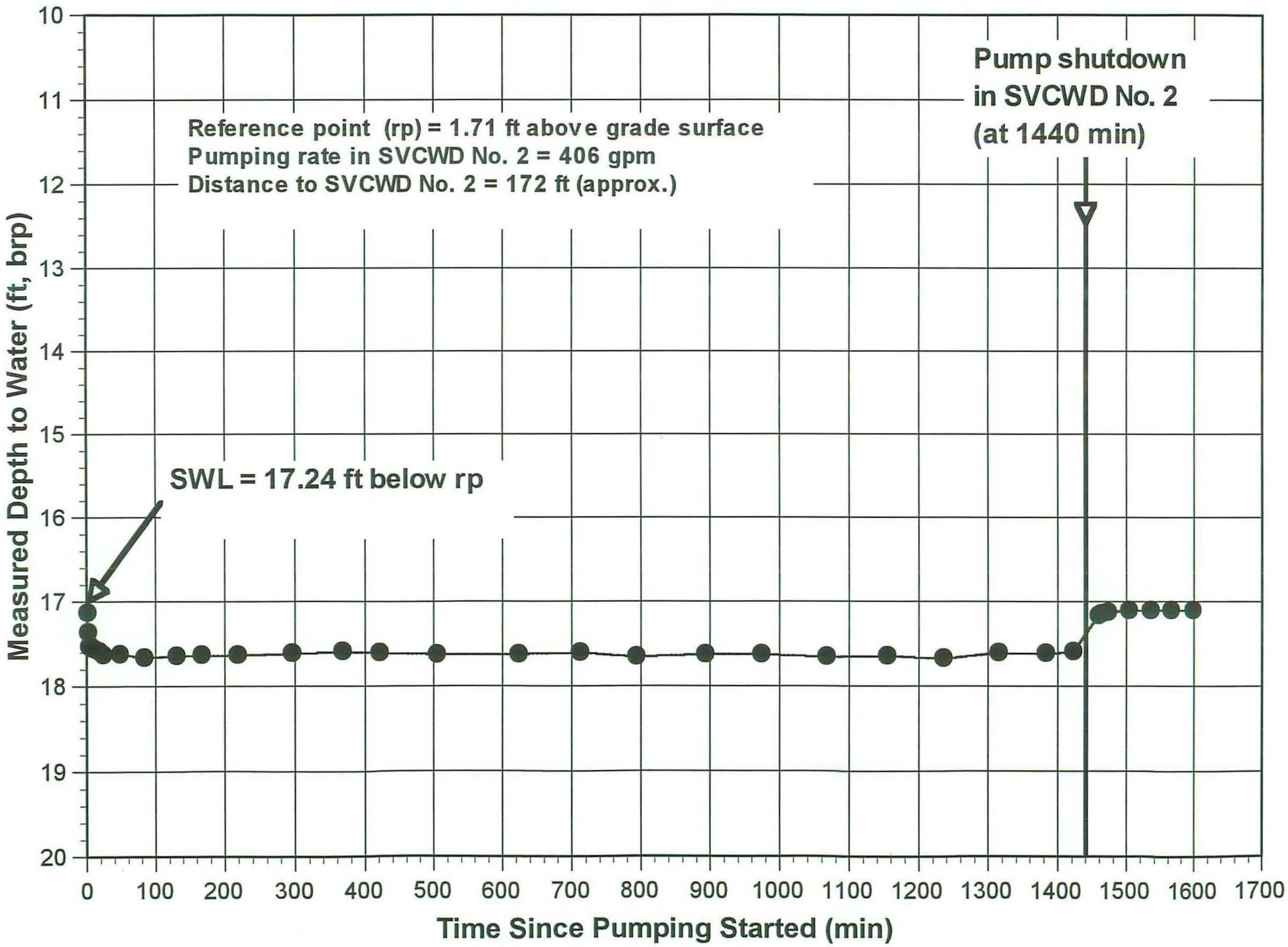


FIGURE 5
Measured Water Levels During Aquifer Testing
Squaw Valley County Water District (SVCWD) Well No. 5
(Observation)

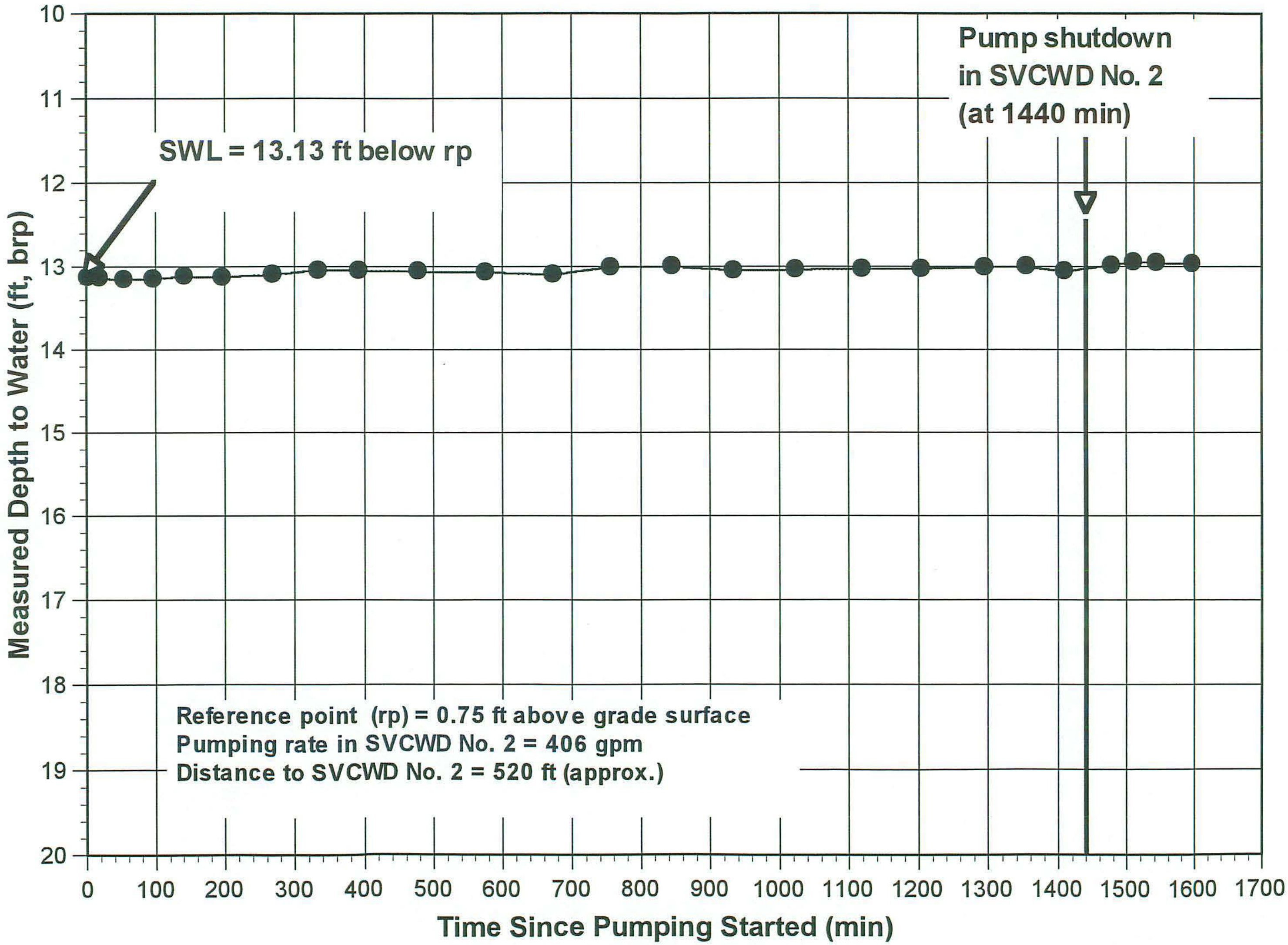


FIGURE 6

Measured Water Levels During Aquifer Testing
Squaw Valley Mutual Water Company Well No. 1
(Observation)

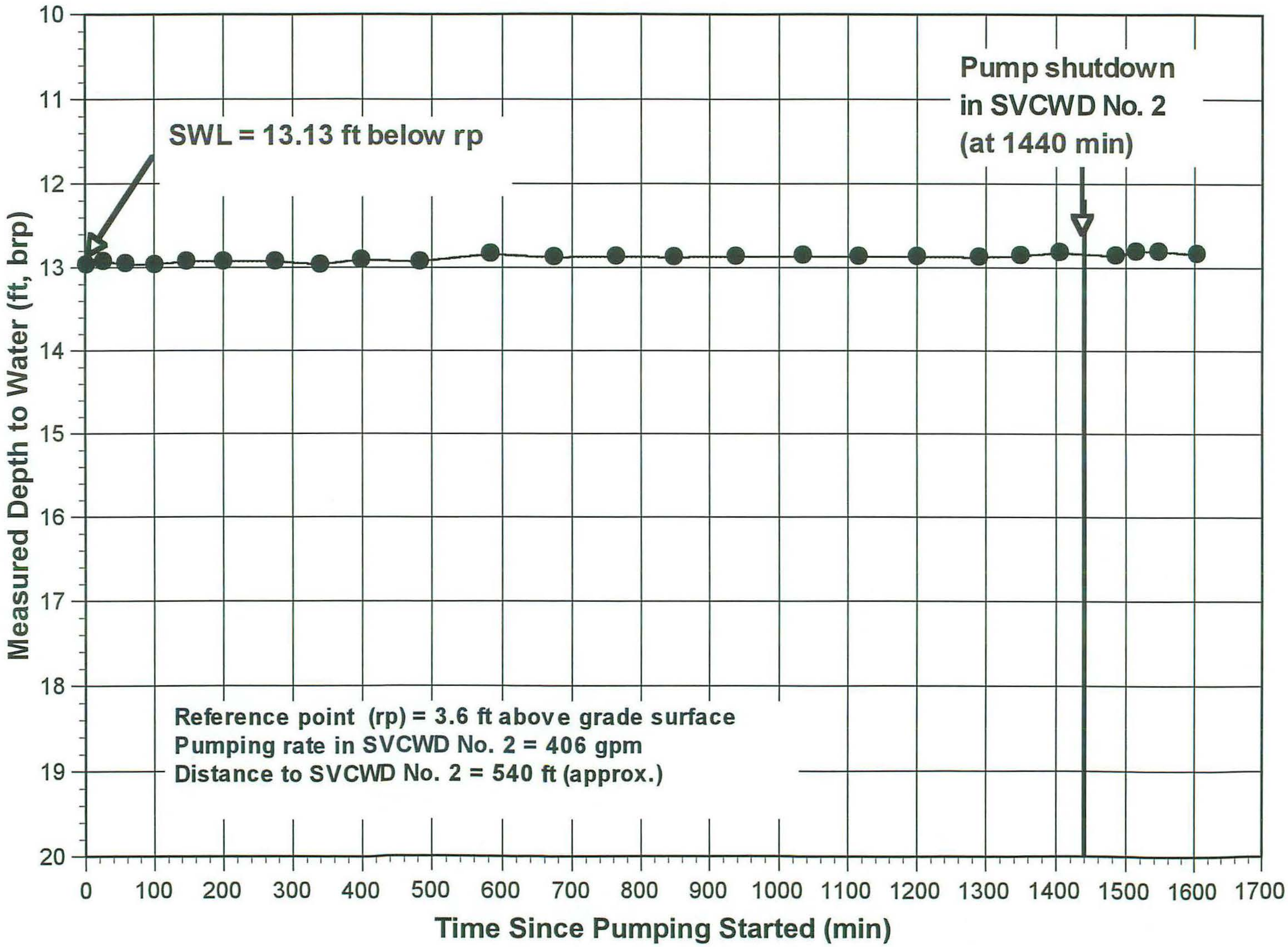


FIGURE 7

Theis Curve Fit

SVCWD Observation Well No. 4

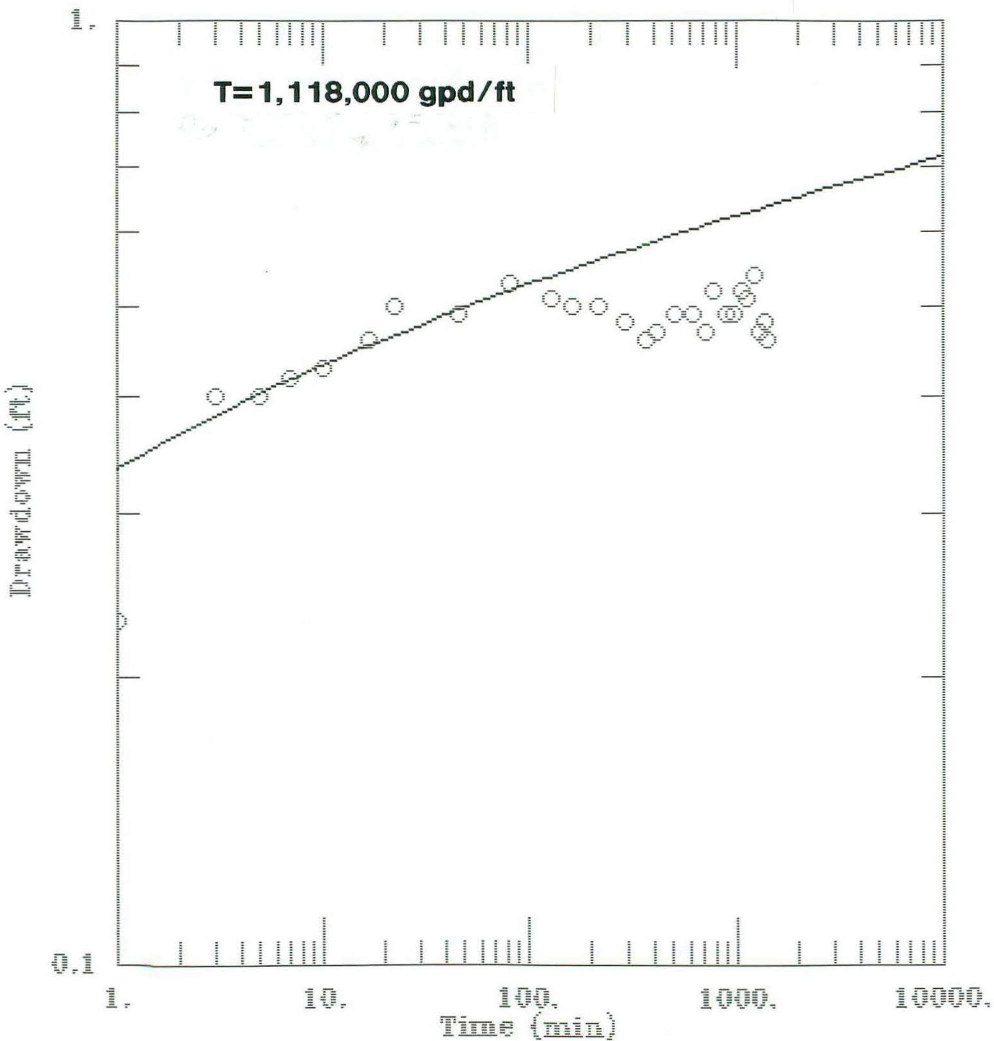


FIGURE 8

Theis Solution

SVCWD Well No. 2 Recovery Test

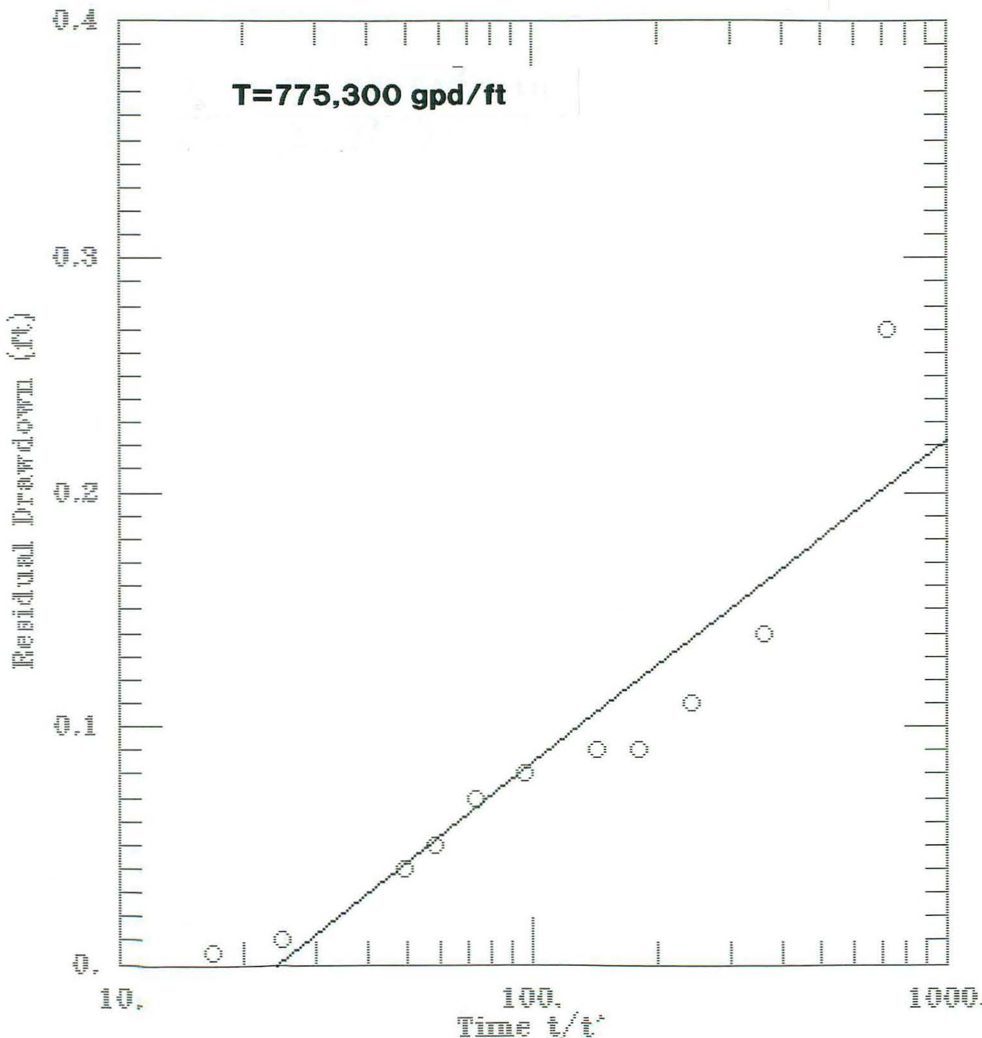


Figure 9
Distance-Drawdown Graph
SVCWD Well No. 2 Aquifer Test

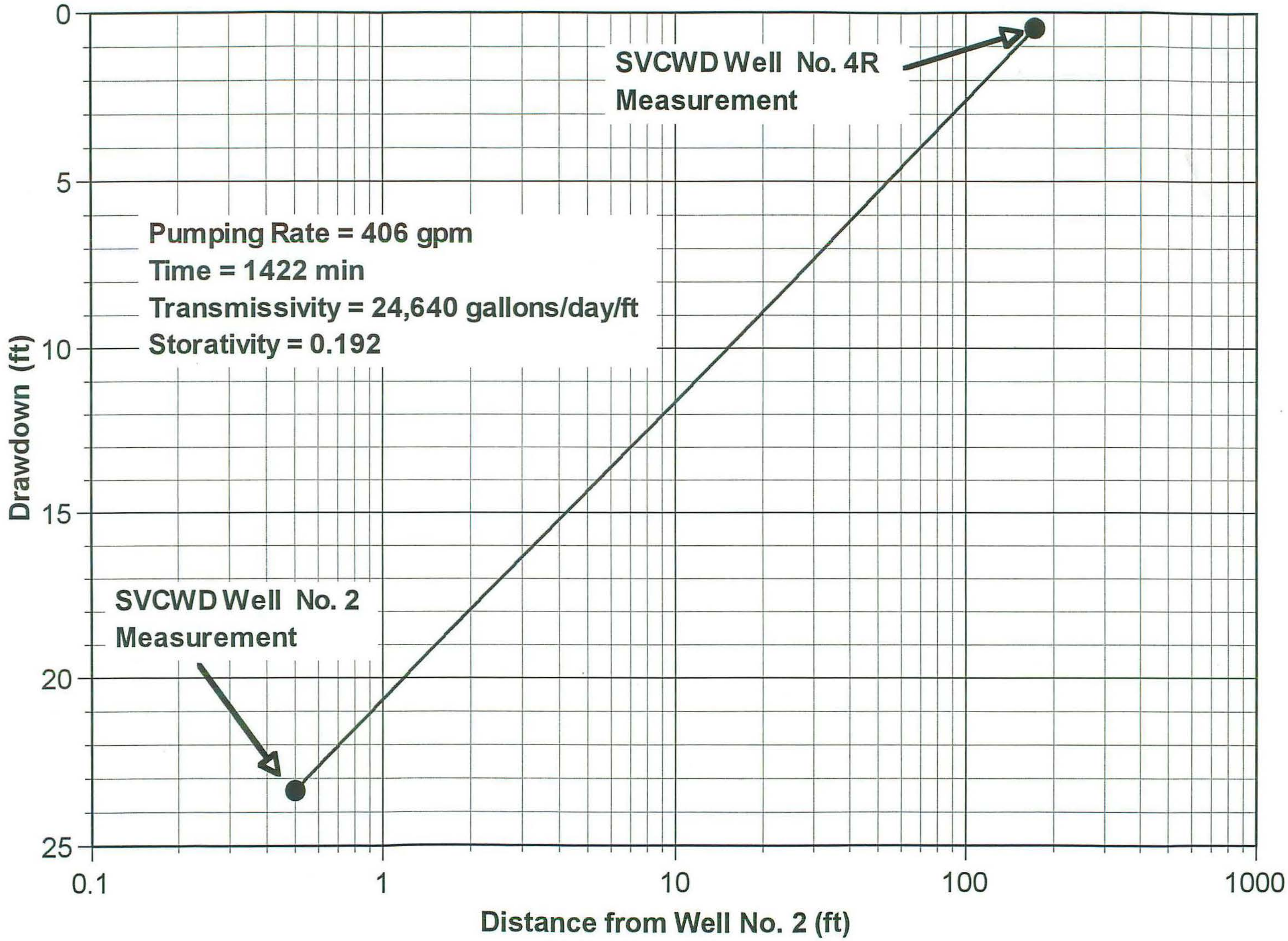


Figure 10
Measured Water Levels During Aquifer Testing
Squaw Creek Resort Golf Course Well No. 18-2
(Observation)

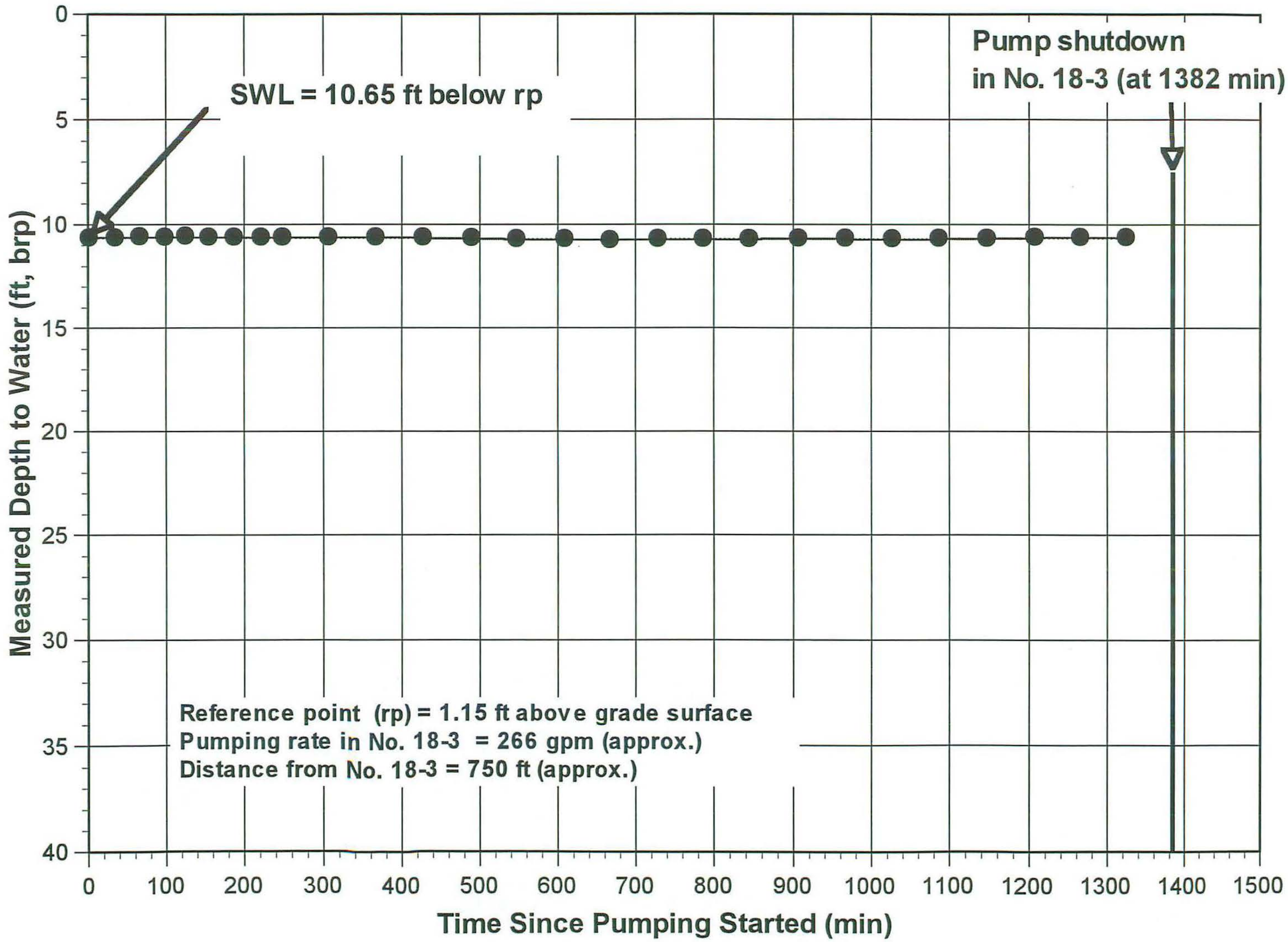


Figure 11
Measured Water Levels During Aquifer Testing
Squaw Creek Resort Golf Course Well No. 18-3
(Pumping Well)

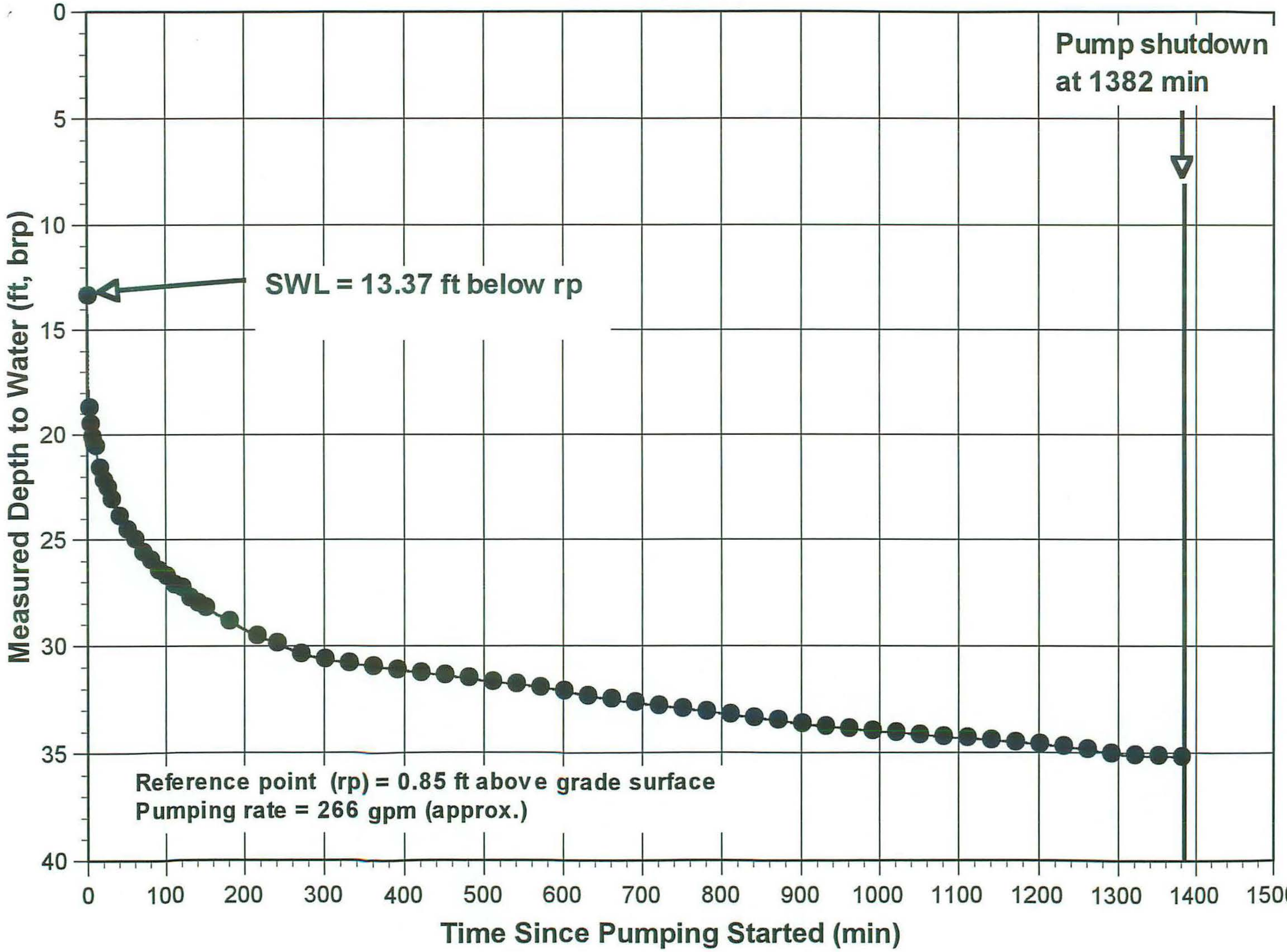


FIGURE 12
Theis Curve Fit
Well No. 18-3 Aquifer Test

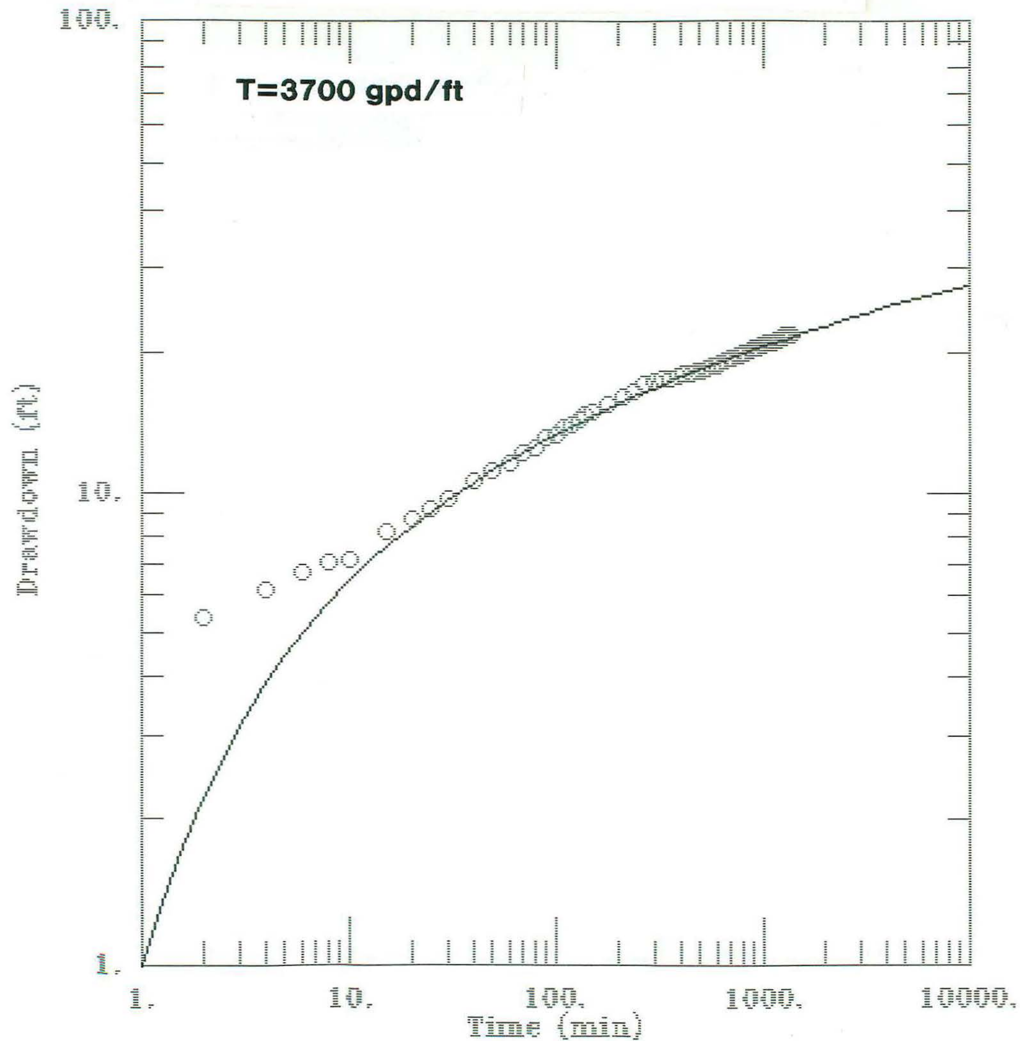


FIGURE 13
Cooper-Jacob Curve-Fit
Early-Time (T_1) Data
Well No. 18-3 Aquifer Test

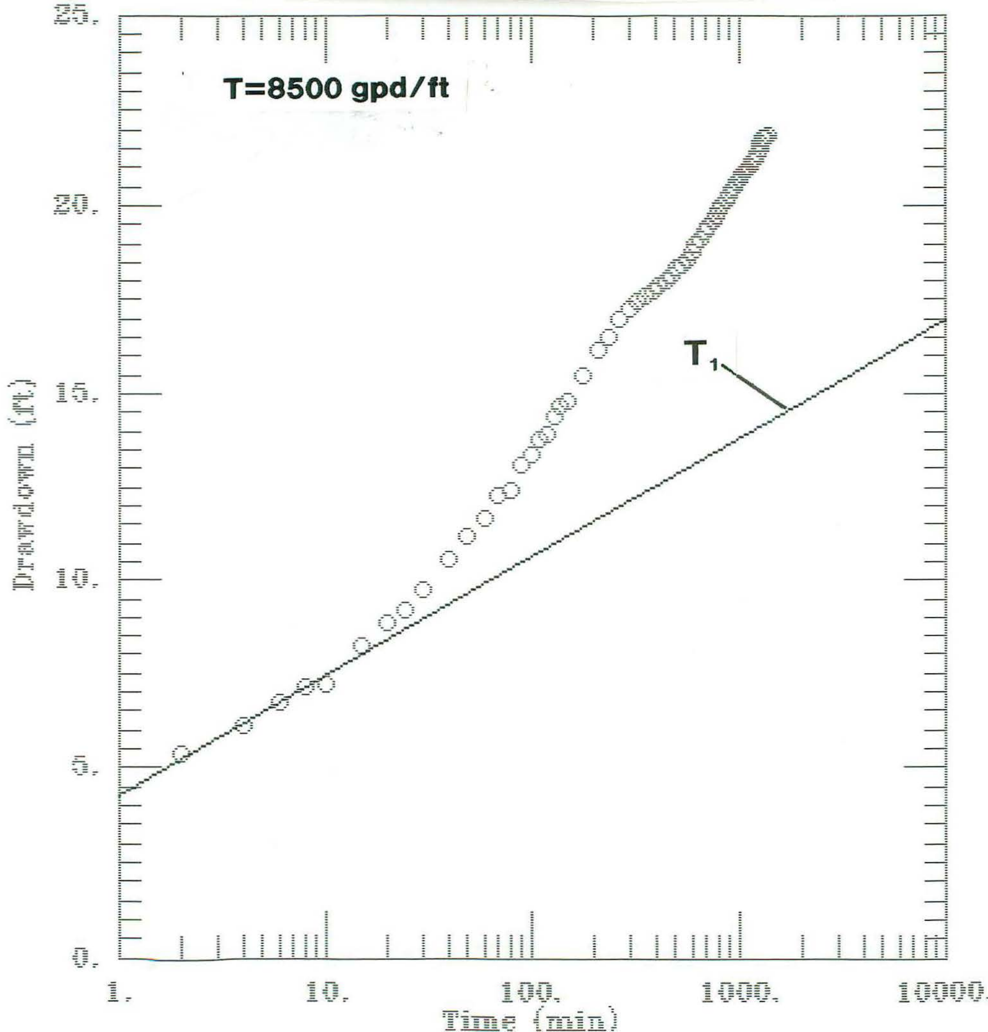


FIGURE 14
Cooper-Jacob Curve-Fit
Late-Time (T_2) Data
Well No. 18-3 Aquifer Test

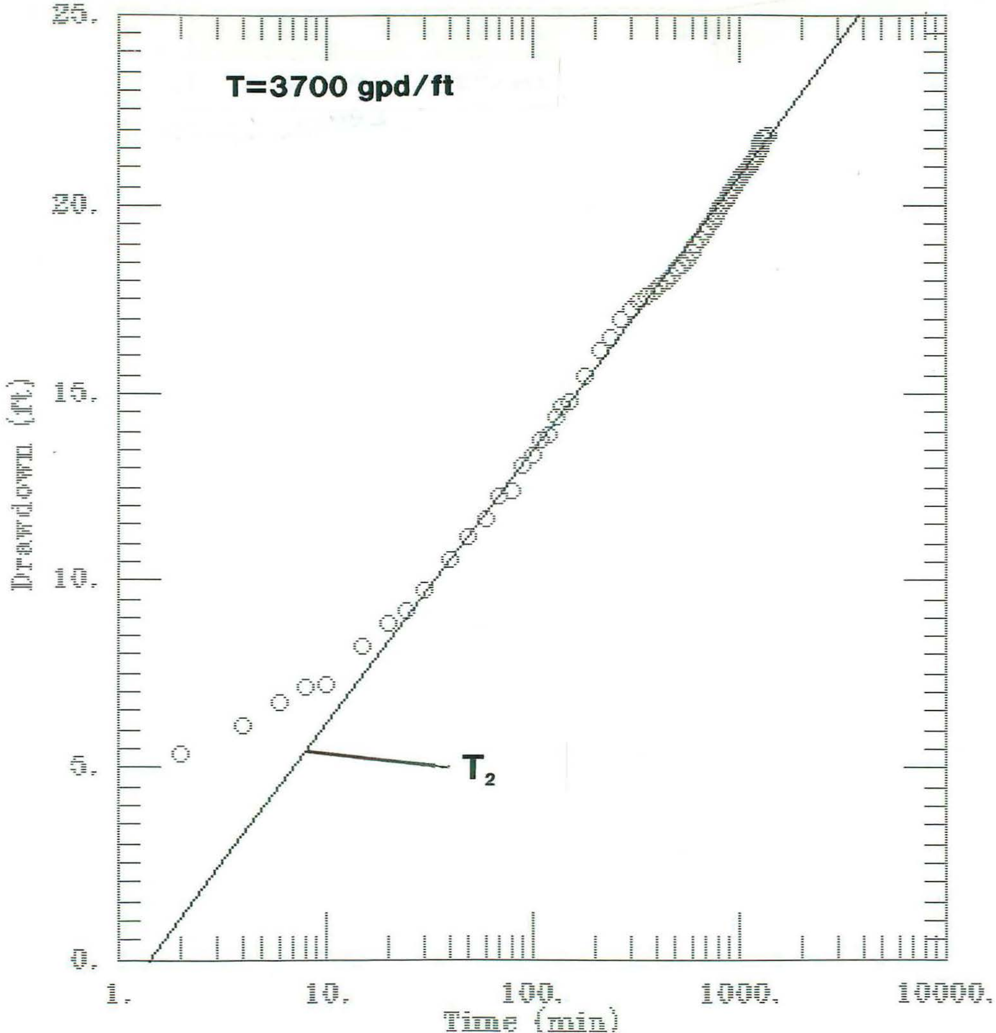


FIGURE 15
Field Water Quality Measurements
Squaw Valley County Water District
(SVCWD) Well No. 2

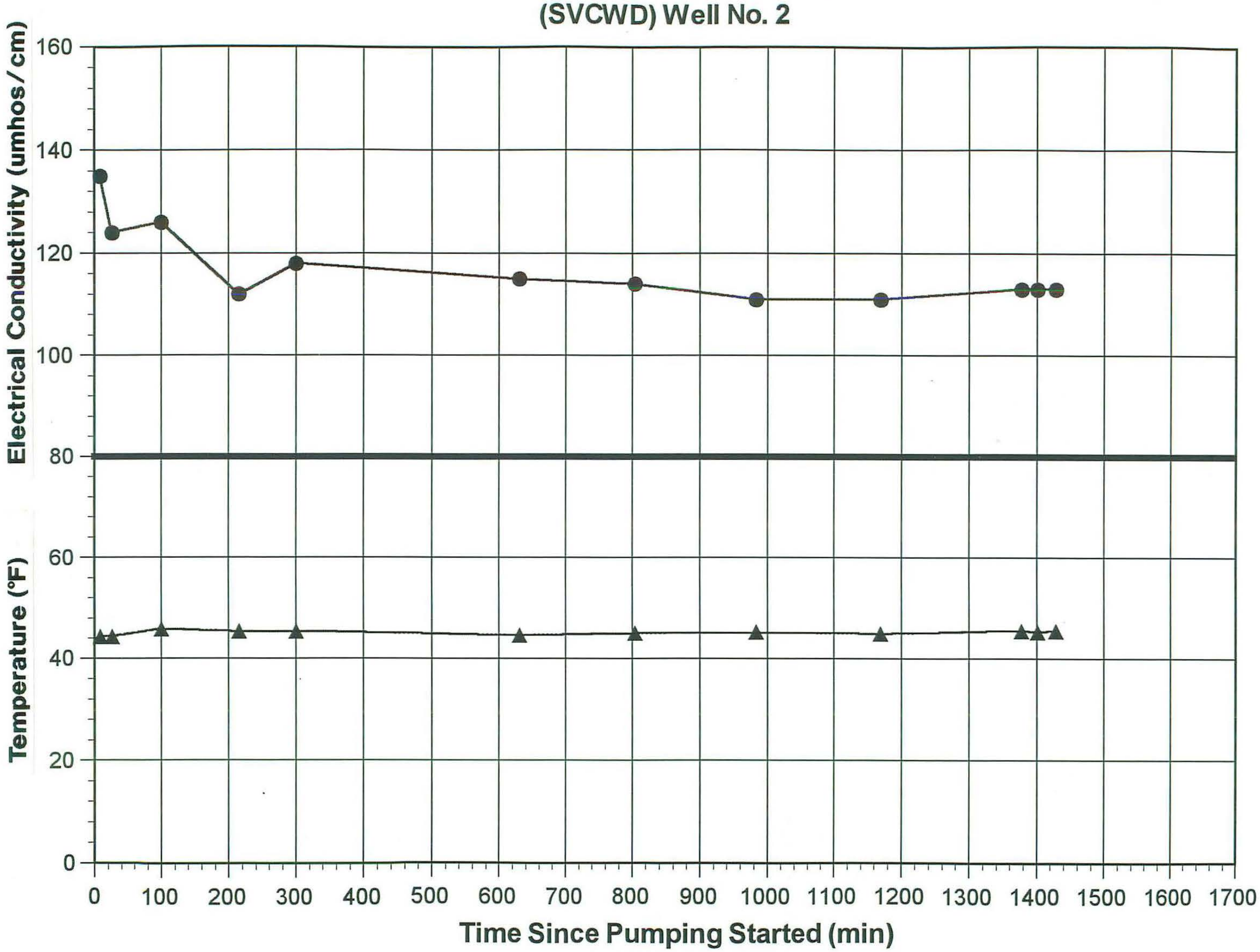
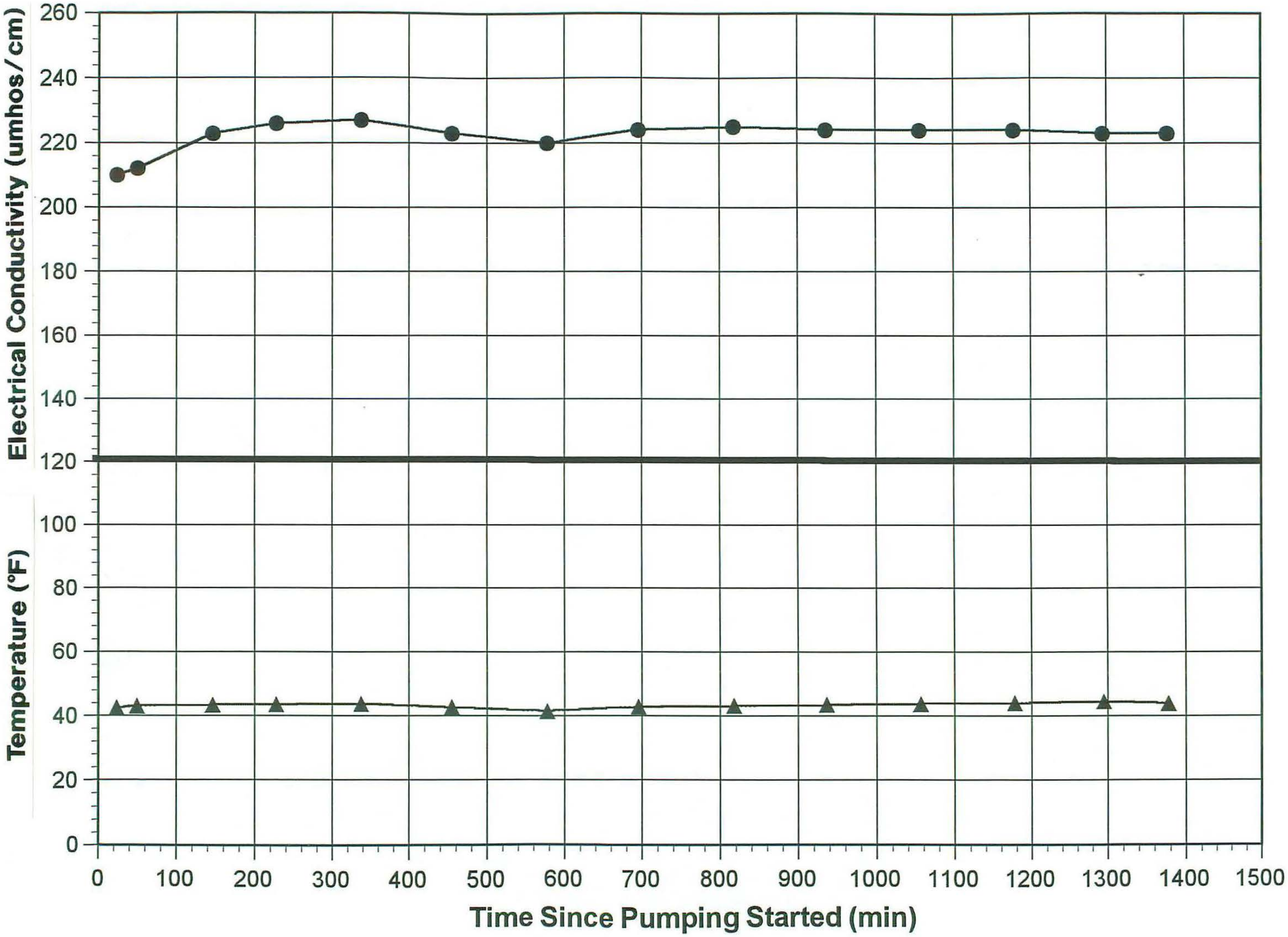
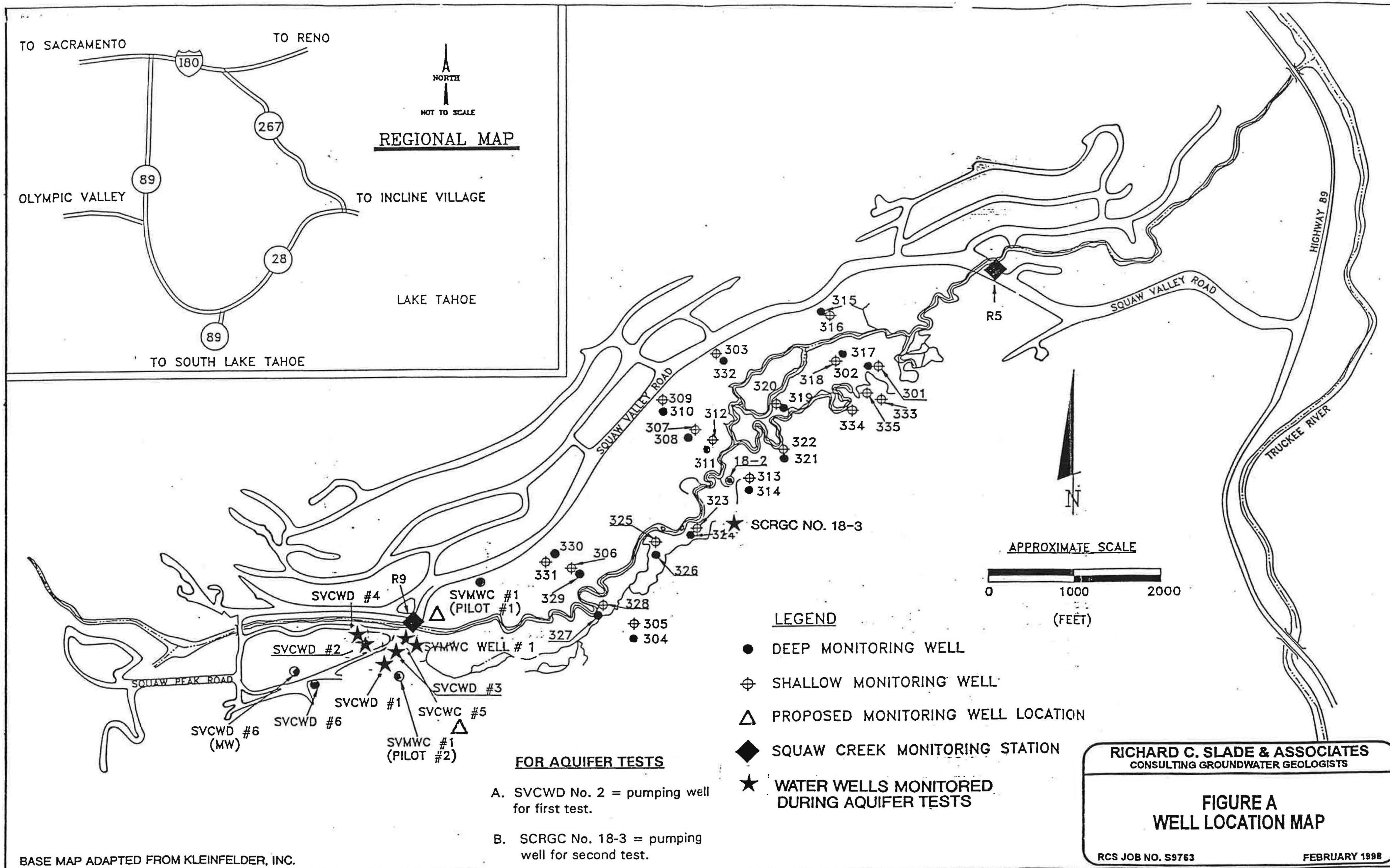


FIGURE 16

Field Water Quality Measurements

Squaw Creek Resort Golf Course Well No. 18-3




TO SACRAMENTO
TO RENO
180
267
NORTH
NOT TO SCALE
REGIONAL MAP
89
OLYMPIC VALLEY
TO INCLINE VILLAGE
28
LAKE TAHOE
89
TO SOUTH LAKE TAHOE
HIGHWAY 89
TRUCKEE RIVER
SQUAW VALLEY ROAD
SQUAW VALLEY ROAD
SQUAW PEAK ROAD
R5
R9
315
316
303
332
317
302
318
301
320
319
333
334
335
309
310
307
308
312
322
321
311
18-2
313
314
323
SCRGC NO. 18-3
325
324
326
330
331
306
329
328
305
304
327
SVCWD #4
SVMWC #1
(PILOT #1)
SVCWD #2
SVMWC WELL # 1
SVCWD #3
SVCWD #1
SVCWC #5
SVCWD #6
(MW)
SVCWD #6
SVMWC #1
(PILOT #2)
N
APPROXIMATE SCALE
0
1000
2000
(FEET)
LEGEND
DEEP MONITORING WELL
SHALLOW MONITORING WELL
PROPOSED MONITORING WELL LOCATION
SQUAW CREEK MONITORING STATION
WATER WELLS MONITORED
DURING AQUIFER TESTS
FOR AQUIFER TESTS
A. SVCWD No. 2 = pumping well for first test.
B. SCRGC No. 18-3 = pumping well for second test.
BASE MAP ADAPTED FROM KLEINFELDER, INC.
RICHARD C. SLADE & ASSOCIATES
CONSULTING GROUNDWATER GEOLOGISTS
FIGURE A
WELL LOCATION MAP
RCS JOB NO. S9763
FEBRUARY 1998