

**ST. JAMES'S VILLAGE  
WELL CONSTRUCTION AND TESTING**

Prepared for:

ST. James's Village, Inc.  
P. O. Box  
Reno, NV 89515

July 31, 00 SJ3 - 247.20 static

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**March 1996**

**Project 95048.45**

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## SUMMARY AND CONCLUSIONS

1. The Nadia Court Well was constructed with 10 $\frac{3}{4}$ -inch diameter casing to a depth of 622 feet below the land surface. Ful-Flo™ louver perforations start at a depth of 262 feet below the land surface.
2. The Entry Meadow Well was constructed with 10 $\frac{3}{4}$ -inch diameter casing to a depth of 590 feet below the land surface. Ful-Flo™ louver perforations start at a depth of 350 feet below the land surface.
3. The Nadia Court Well was test pumped for 9 days, 20 hours at a rate of 350 gallons per minute. The pumping water level at the conclusion of the test was approximately 289 feet below the land surface, a drawdown of approximately 94 feet. No air was observed in the discharge although the pumping water level was 27 feet below the top of the perforations.
4. The average Transmissivity of the aquifer in the vicinity of the Nadia Court Well is approximately 3,400 feet<sup>2</sup>/day and the Coefficient of Storage is 0.0005. An impermeable boundary is indicated for a distance of approximately 1,000 feet from the well. Its suspected location is east of the Nadia Court Well, between it and the Entry Meadow Well.
5. The Nadia Court Well is rated to yield 325 gpm. After 90 days of continuous pumping at this rate, the pumping water level in the well is projected to be 287 feet below the land surface. *Screen starts @ 262*
6. Blank casing in the Nadia Court Well between depths of 382 and 402 feet was reserved for housing the production pump. The recommended pump setting is, therefore, approximately 390 feet below the land surface.
7. The Entry Meadow Well was test pumped for 10 days at a rate of approximately 400 gallons per minute. The pumping water level at the conclusion of the test was approximately 349 feet below the land surface, a drawdown of approximately 111 feet. No air was observed in the discharge. *1350*
8. The average Transmissivity of the aquifer in the vicinity of the Entry Meadow Well is approximately 2,400 feet<sup>2</sup>/day and the Coefficient of Storage is 0.00018. An impermeable boundary is indicated approximately 6,000 feet from the well. Its suspected location is east of the Entry Meadow Well.
9. The Entry Meadow Well is rated to yield 390 gpm. After 90 days of continuous pumping at this rate, the pumping water level in the well is projected to be 350 feet below the land surface. *Screen starts @ 350*
10. Blank casing in the Entry Meadow Well between depths of 490 and 510 feet was reserved for housing the production pump. The recommended pump setting is, therefore, approximately 500 feet below the land surface.
11. The chemical quality of the groundwater derived from both wells is very good and meets all current drinking water standards.

John - We probably did recommend the Nadia Court well be the secondary well because of drawdown dropping below the top of screens. However we could try it as the lead well and see if it causes any problems. It did not seem to cause any problems during test pumping.

Dan

## SUMMARY AND CONCLUSIONS

1. The Nadia Court Well was constructed with 10 $\frac{3}{4}$ -inch diameter casing to a depth of 622 feet below the land surface. Ful-Flo™ louver perforations start at a depth of 262 feet below the land surface.
2. The Entry Meadow Well was constructed with 10 $\frac{3}{4}$ -inch diameter casing to a depth of 590 feet below the land surface. Ful-Flo™ louver perforations start at a depth of 350 feet below the land surface.
3. The Nadia Court Well was test pumped for 9 days, 20 hours at a rate of 350 gallons per minute. The pumping water level at the conclusion of the test was approximately 289 feet below the land surface, a drawdown of approximately 94 feet. No air was observed in the discharge although the pumping water level was 27 feet below the top of the perforations.
4. The average Transmissivity of the aquifer in the vicinity of the Nadia Court Well is approximately 3,400 feet<sup>2</sup>/day and the Coefficient of Storage is 0.0005. An impermeable boundary is indicated for a distance of approximately 1,000 feet from the well. Its suspected location is east of the Nadia Court Well, between it and the Entry Meadow Well.
5. The Nadia Court Well is rated to yield 325 gpm. After 90 days of continuous pumping at this rate, the pumping water level in the well is projected to be 287 feet below the land surface. Screen starts @ 262
6. Blank casing in the Nadia Court Well between depths of 382 and 402 feet was reserved for housing the production pump. The recommended pump setting is, therefore, approximately 390 feet below the land surface.
7. The Entry Meadow Well was test pumped for 10 days at a rate of approximately 400 gallons per minute. The pumping water level at the conclusion of the test was approximately 349 feet below the land surface, a drawdown of approximately 111 feet. No air was observed in the discharge.
8. The average Transmissivity of the aquifer in the vicinity of the Entry Meadow Well is approximately 2,400 feet<sup>2</sup>/day and the Coefficient of Storage is 0.00018. An impermeable boundary is indicated approximately 6,000 feet from the well. Its suspected location is east of the Entry Meadow Well.
9. The Entry Meadow Well is rated to yield 390 gpm. After 90 days of continuous pumping at this rate, the pumping water level in the well is projected to be 350 feet below the land surface. Screen starts @ 350
10. Blank casing in the Entry Meadow Well between depths of 490 and 510 feet was reserved for housing the production pump. The recommended pump setting is, therefore, approximately 500 feet below the land surface.
11. The chemical quality of the groundwater derived from both wells is very good and meets all current drinking water standards.

John - We probably did recommend the Nadia Court well be the secondary well because of drawdown dropping below the top of screens. However we could try it as the lead well and see if it causes any problems. It did not seem to cause any problems during test pumping.

Dan

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## SUMMARY AND CONCLUSIONS

1. The Nadia Court Well was constructed with 10 $\frac{3}{4}$ -inch diameter casing to a depth of 622 feet below the land surface. Ful-Flo<sup>TM</sup> louver perforations start at a depth of 262 feet below the land surface.
2. The Entry Meadow Well was constructed with 10 $\frac{3}{4}$ -inch diameter casing to a depth of 590 feet below the land surface. Ful-Flo<sup>TM</sup> louver perforations start at a depth of 350 feet below the land surface.
3. The Nadia Court Well was test pumped for 9 days, 20 hours at a rate of 350 gallons per minute. The pumping water level at the conclusion of the test was approximately 289 feet below the land surface, a drawdown of approximately 94 feet. No air was observed in the discharge although the pumping water level was 27 feet below the top of the perforations.
4. The average Transmissivity of the aquifer in the vicinity of the Nadia Court Well is approximately 3,400 feet<sup>2</sup>/day and the Coefficient of Storage is 0.0005. An impermeable boundary is indicated for a distance of approximately 1,000 feet from the well. Its suspected location is east of the Nadia Court Well, between it and the Entry Meadow Well.
5. The Nadia Court Well is rated to yield 325 gpm. After 90 days of continuous pumping at this rate, the pumping water level in the well is projected to be 287 feet below the land surface. *Screen starts @ 262*
6. Blank casing in the Nadia Court Well between depths of 382 and 402 feet was reserved for housing the production pump. The recommended pump setting is, therefore, approximately 390 feet below the land surface.
7. The Entry Meadow Well was test pumped for 10 days at a rate of approximately 400 gallons per minute. The pumping water level at the conclusion of the test was approximately 349 feet below the land surface, a drawdown of approximately 111 feet. No air was observed in the discharge.
8. The average Transmissivity of the aquifer in the vicinity of the Entry Meadow Well is approximately 2,400 feet<sup>2</sup>/day and the Coefficient of Storage is 0.00018. An impermeable boundary is indicated approximately 6,000 feet from the well. Its suspected location is east of the Entry Meadow Well. *1350*
9. The Entry Meadow Well is rated to yield 390 gpm. After 90 days of continuous pumping at this rate, the pumping water level in the well is projected to be 350 feet below the land surface. *Screen starts @ 350*
10. Blank casing in the Entry Meadow Well between depths of 490 and 510 feet was reserved for housing the production pump. The recommended pump setting is, therefore, approximately 500 feet below the land surface.
11. The chemical quality of the groundwater derived from both wells is very good and meets all current drinking water standards.

## INTRODUCTION

Saint James's Village is a 530 unit residential subdivision located on the Mount Rose fan area of southwest Washoe County, Nevada approximately 12 miles south of Reno. The water supply to 522 units will be provided by quasi-municipal wells located within the project boundaries. The remaining eight lots will be served by the Mount Rose water system. At buildout, the peak water supply requirement of the 522 units is 762 gallons per minute and the average demand is 254 gpm, plus a minimal amount for common area landscaping. Immediately upon completion of facilities, the owner/developer will dedicate the water supply to Washoe County and the wells will be operated and maintained by the Washoe County Utility Division.

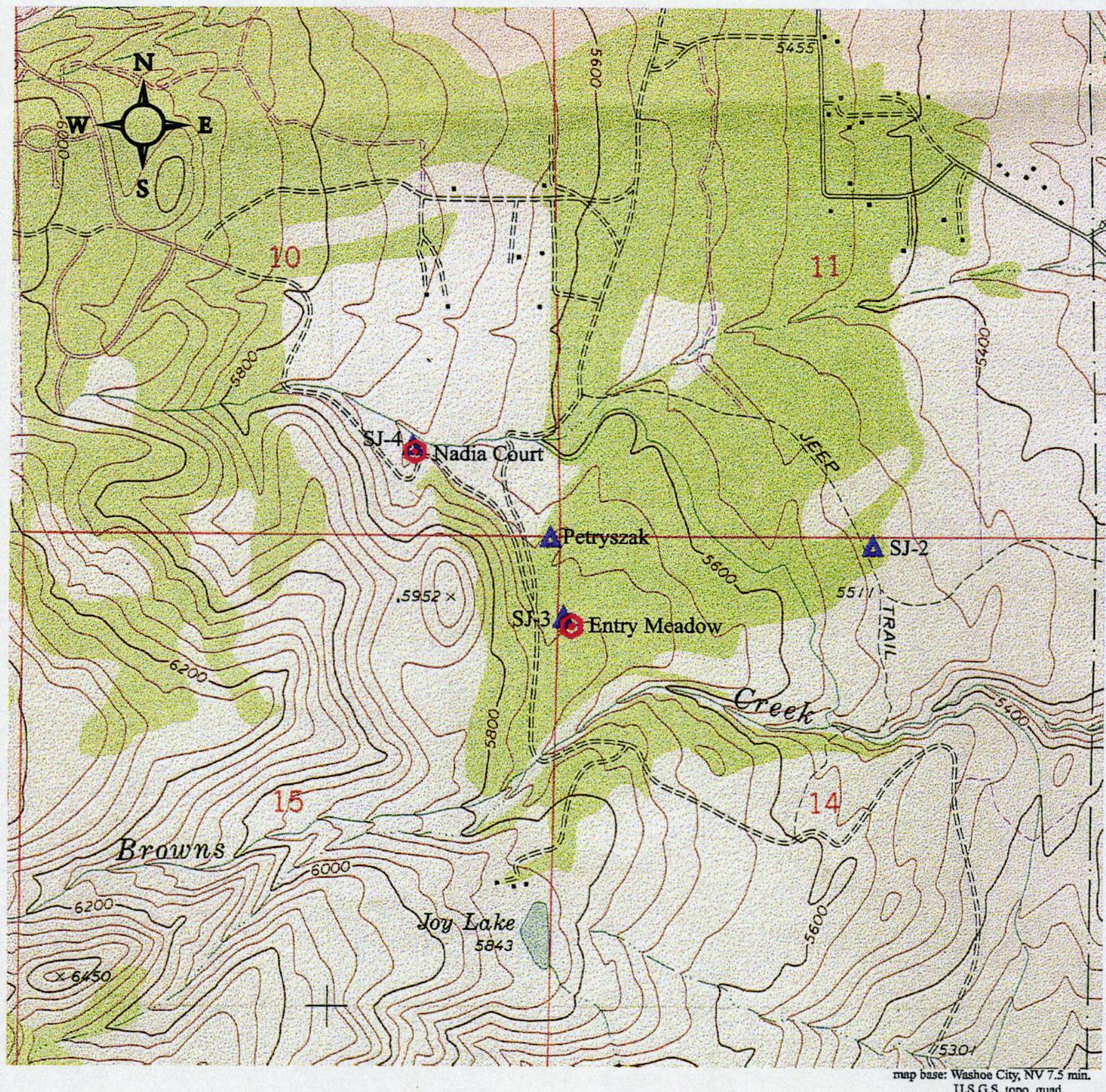
In 1993, the Washoe County Utility Division (WCUD) undertook an exploratory well drilling and testing program at St. James's Village to assess the potential to develop sufficient groundwater resources to serve as the source of water supply to the subdivision. A total of four exploratory wells were drilled. These wells are referred to as SJ-1, SJ-2, SJ-3, and SJ-4. Of the four wells, three (SJ-2, -3, and -4) were test pumped to evaluate the hydrogeologic properties of the aquifer and to determine whether the sites warranted construction of production wells. The well locations are shown in Figure 1. The results of this exploratory program were summarized in a report prepared by the Utility Division [Widmer, 1993(?)]. All three of the exploratory well sites that were test pumped received a recommendation to drill a production well (*ibid*). Assuming each well had the potential to yield up to 300 gpm, a total of three wells were required to meet the water supply demand for the project.

Consulting Engineering Services, Inc. (CES) was retained by the Owner, St. James's Village, Inc., to provide consulting services relevant to the construction and test pumping of two production wells. These wells are referred to as the Nadia Court Well and the Entry Meadow Well. They were constructed at the sites of exploratory wells SJ-4 and SJ-3, respectively (refer to Figure 1). The services provided by CES included:

- preparing the technical specifications for the wells,
- soliciting bids from qualified well drilling contractors,
- securing discharge permits needed for test pumping,
- preparing the final well design for each well on the basis of the information gained through drilling of the exploratory wells and pilot holes,
- monitoring the construction of the wells for compliance with the specifications,
- executing well performance and aquifer stress tests,
- evaluating the long-term performance of the production wells,
- and documenting the drilling and testing results through the preparation of this technical report.

During the extended aquifer stress (pumping) tests, CES staff was supplemented by personnel from the WCUD under direct contract with the owner. The Utility Division also provided a field office trailer for use during the testing program. Their assistance was greatly appreciated.

This report summarizes the construction and test pumping of the Nadia Court and Entry Meadow Well. The predicted performance of the wells over a range of pumping rates is offered as a guide to rating the yield of the wells.



St. James's Village Water Supply Well



Observation Well

FIGURE 1. ST. JAMES'S VILLAGE WELL LOCATION MAP.

## WELL CONSTRUCTION SUMMARY

Sargent Drilling of Reno, Nevada was contracted by the Owner to drill, construct, and test pump the wells. Both wells were drilled by the reverse-circulation method, except for the uppermost part of each pilot borehole which was drilled by the direct mud-rotary method to a depth sufficient to initiate reverse circulation drilling. Water was the preferred drilling fluid, but bentonite was ultimately added to the drilling fluid to reduce fluid loss in the permeable horizons of the geologic formation. The construction of both wells is summarized below. The pumping tests and testing results are summarized in subsequent sections of the report.

### NADIA COURT WELL

The Nadia Court Well is located in the SW $\frac{1}{4}$  SE $\frac{1}{4}$  of Section 10, Township 17 North, Range 19 East (M.D.B.&M.) east of Nadia Court and southwest of Joy Lake Road and Nadia Court (refer to Figure 1). It is positioned approximately 79 feet South 15° East of the exploratory well SJ-4. Drilling of the 12 $\frac{1}{4}$ -inch diameter pilot hole for the Nadia Court Well commenced November 6, 1995 and was completed to a depth of 701 feet on November 10. A summary of the geologic materials penetrated by the borehole is provided below. A geologic log of the borehole is provided in Appendix A.

TABLE 1. ABBREVIATED LITHOLOGIC LOG FOR THE NADIA COURT WELL

Depth Interval (ft)	Description
0 to 100	Unconsolidated alluvial and colluvial deposits. Ranged from poorly sorted clayey, silty, gravelly sand to moderately well sorted sand and gravel.
100 to 131	Grey welded tuff.
131 to 384	A series of andesite lava flows. Dark grey to black. Color changes to brown at "cooling breaks" separating individual flow units. Varies from aphanitic-porphyritic to porphyritic. Principal phenocrysts are plagioclase and diopside. A total loss of circulation was encountered at 268 feet. Other significant lost circulation zones (LCZs) were encountered at 345 and 351 feet.
384 to 418	Lahar (andesitic mud flow) comprising andesite clasts ranging in size from boulders to coarse sand in a matrix of weak red to brown clay, silt and fine sand.
418 to 426	Andesitic lava flow. Similar to above.
426 to 438	Lahar. Andesitic clasts in reddish brown to weak red clay matrix.
438 to 470	Andesite lava flow. Dark yellowish brown color.
470 to 488	Lahar. Andesite clasts in dark greyish brown clay matrix.
488 to 503	Andesite lava flow. Porphyritic, with plagioclase and diopside(?) phenocrysts.
503 to 510	Volcanic ash. Dark greyish brown.
510 to 517	Andesite lava flow.
517 to 533	Volcanic ash. Reddish brown to grey.
533 to 573	Lahar.
573 to 623	Andesite lava flow(s). Red brown, brownish black and dark grey brown.
623 to 690	Lahar. Andesite clasts in a mottled dark grey to light grey clay matrix. Drilled slow and smooth due to the large percentage of clay.

Immediately upon completion of the pilot hole, a borehole geophysical survey was performed. The survey provided logs of spontaneous potential, resistivity (point resistivity, 16-inch and 64-inch normal resistivity, and 6-foot lateral resistivity), natural gamma radiation, and borehole diameter (caliper log). The geophysical logs are provided in Appendix B.

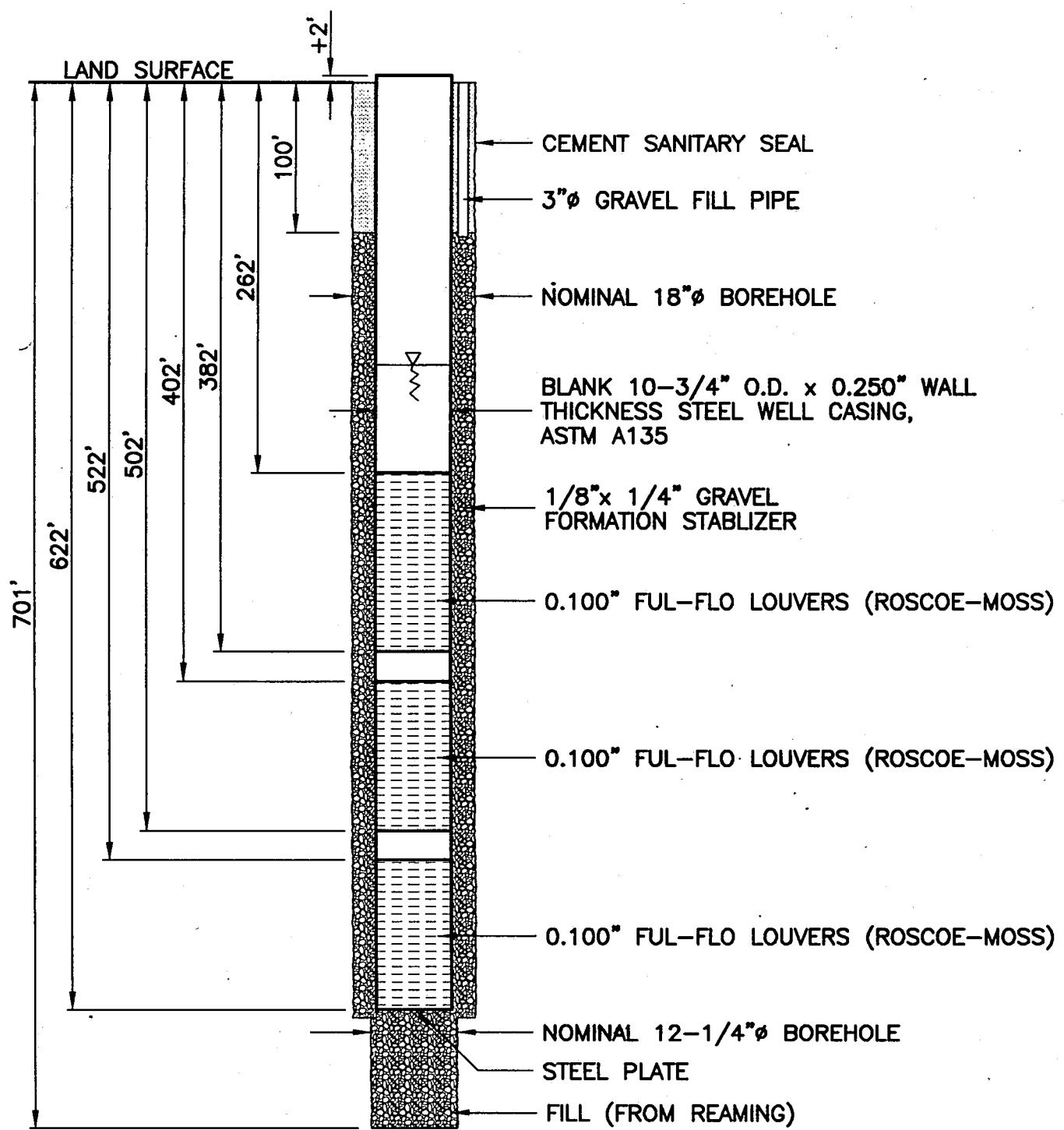
The production well design (casing diameter and perforated interval) was determined on the basis of the geologic log, geophysical logs, intervals where circulation was lost during the drilling of the pilot hole, and the data and information obtained from the nearby SJ-4 exploratory well. Completing the well beyond a depth of 620 feet was not warranted on the basis of the data gathered from the pilot hole.

Reaming the pilot hole to a nominal diameter of 17½ inches commenced November 16, 1995 and was completed to a depth of 628 feet on November 18. Installation of the casing and gravel pack was completed November 19. The sanitary seal was emplaced November 20. Construction details are listed below and depicted in Figure 2.

TABLE 2. CONSTRUCTION SUMMARY FOR NADIA COURT WELL - Casing Schedule

Depth Interval (ft)	Description
+2 to 262 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 blank steel well casing.
262 to 382 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 steel well casing with 0.100-inch aperture width louvered perforations, Ful-Flo™ pattern.
382 to 402 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 blank steel well casing.
402 to 502 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 steel well casing with 0.100-inch aperture width louvered perforations, Ful-Flo™ pattern.
502 to 522 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 blank steel well casing.
522 to 622 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 steel well casing with 0.100-inch aperture width louvered perforations, Ful-Flo™ pattern. Steel plate welded to the bottom.
Other	
Centralizers	¼" x 2" x 2' steel, welded three around at 100-feet intervals, starting from the bottom.
Gravel pack	30 cubic yards ⅛" x ¼" size gravel formation stabilizer (provided by Chevereaux Sand and Gravel). Installed from the bottom of the well to a depth of 105 feet. Overlain by a pelletized bentonite grout cutoff.
Gravel-fill pipe	3-inch pipe size steel pipe to a depth of 105 feet.
Sanitary seal	8 cubic yards of cement grout. Seal extends to a depth of 100 feet.

Initial well development commenced November 19, 1995, before the installation of the cement sanitary seal. This phase of well development comprised removing the residual drilling fluid from the well. The well was then dosed with soda acid polyphosphate (SAPP) to break down the clay "wall cake" which forms on the interior of the well bore followed by granular chlorine to break down Magma Fiber™, an acid soluble mineral fiber used to combat extreme loss of drilling fluid. The residual from these treatments was also disposed of by the contractor. Subsequent well development comprised alternately swabbing and air-lift pumping the entire screened portion of the well in 10-foot increments. This work started at the bottom of the well and progressed upward to the top of the screened interval. Each 10-foot section of screen was repeatedly swabbed and air-lifted by the reverse circulation method until the discharge was free of residual formation material. The air-lift discharge was routed to tanks at the site to promote settling of suspended solids prior to discharging the supernatant fluid. Once this aspect of development was completed, the well was direct airlift pumped until the discharge was clean. Well development utilizing the drilling rig was completed November 21, 1995.



NOTE:

CASING GUIDES,  
3 ROUND EVERY  
80 FEET.

ST. JAMES VILLAGE  
NADIA COURT WELL

WELL DETAIL

Final well development comprised surging the well with the test pump. Alternately surging and pumping the well at rates of up to 500 gpm was continued until the discharge was clear after each surging episode and the sand content, measured with a Rossum™ sand tester was less than 5 p.p.m. Developmental pumping was completed January 3, 1996.

### ENTRY MEADOW WELL

The Entry Meadow Well is located in the NW $\frac{1}{4}$  NE $\frac{1}{4}$  of Section 14, Township 17 North, Range 19 East (M.D.B.&M.) northeast of the corner of Joy Lake Road and Woodspark Drive (formerly St. James's Parkway)(refer to Figure 1). It is positioned approximately 35 feet South 35° East of exploratory well SJ-3. Drilling the 12 $\frac{1}{4}$ -inch diameter pilot hole for the Entry Meadow Well commenced November 30, 1995 and was completed to a depth of 606 feet on December 6, 1995. A summary of the geologic materials penetrated by the borehole is provided below. A geologic log of the borehole is provided in Appendix A.

TABLE 3. ABBREVIATED LITHOLOGIC LOG FOR THE ENTRY MEADOW WELL.

Depth interval (feet)	Description
0 to 167	Alluvial and or colluvial deposits. Vary from poorly sorted bouldery, silty sand and gravel to sandy gravel.
167 to 214	A series of andesite lava flows. Dark greenish grey, medium grey, and olive grey. Aphanitic-porphyritic to porphyritic. At cooling breaks between individual flow units the color changes to brown.
214 to 245	Lahar.
245 to 250	Andesite flow.
250 to 262	Lahar.
262 to 265	Sandy fine gravel.
265 to 296	Welded tuff.
296 to 325	Sand and sandy gravel.
325 to 347	Clayey sand and gravel and gravelly clay. Clay varies between light brown, reddish brown, and yellow brown. The clay is moderately stiff to stiff and gravel is embedded in the clay.
347 to 352	Welded tuff. Grey and friable.
352 to 430	Andesite lava flows. Aphanitic-porphyritic to porphyritic with plagioclase and pyroxene phenocrysts, occasionally vesicular, presumably at the top of individual flow units. Color varies between dark grey, black, and reddish brown. The reddish brown color may also mark the upper or lower margins of individual flows. Massive fluid loss occurred at 398 feet with additional 416 feet at both LCZs were coincidental with the boundaries between individual flow units.
430 to 457	Andesite breccia. Blocks of andesite with a small amount of silt and sand sized matrix. Color varies between brownish black, reddish brown and yellowish orange. Distinguishable from lahar by percentage of fine sized material (more correctly, the dearth of clay and silt matrix).
457 to 518	Lahar. Clasts of andesitic volcanic rocks in a matrix of silt and clay. Clay and silt content increases with depth to 505 feet where fines represent 50% of the cuttings.
518 to 568	Andesite breccia.
568 to 606	Lahar.

Immediately upon completion of the pilot hole, a borehole geophysical survey was performed. The survey provided logs of spontaneous potential, guarded resistivity, natural gamma radiation, and borehole diameter (caliper log). The geophysical logs are provided in Appendix B.

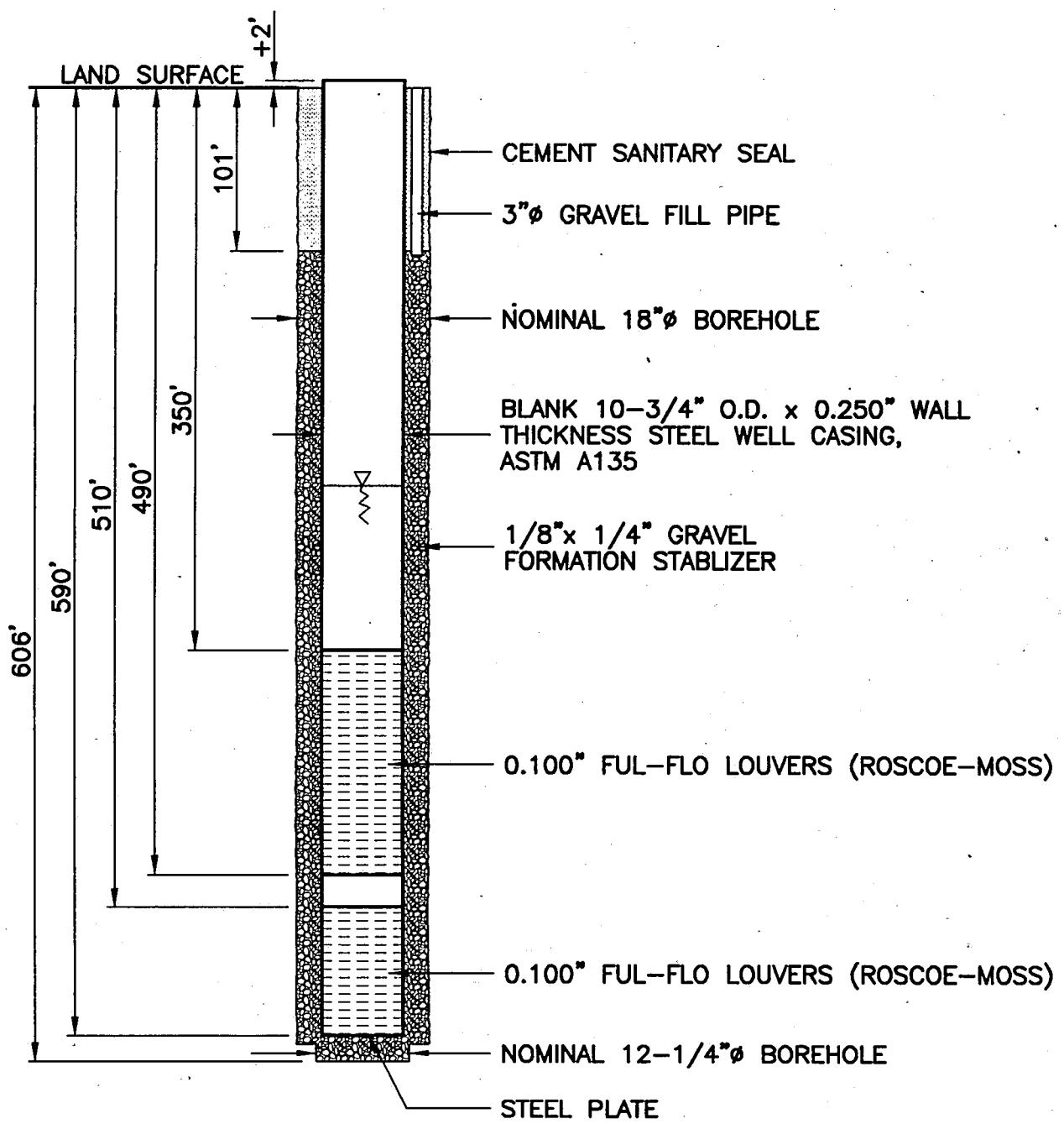
The production well design (casing diameter and perforated interval) was determined on the basis of the geologic log, geophysical logs, intervals where circulation was lost during the drilling of the pilot hole, and the data and information obtained from the nearby SJ-3 exploratory well. The caliper log for this well showed good correlation with highly permeable zones where significant loss of circulation occurred. Andesitic lava flows were obvious in the logs. The distinction between breccia and lahar (mud flows) was more subjective.

Reaming of the pilot hole to a diameter of 17½ inches commenced December 9, 1995 and was completed to a depth of 596 feet on December 13. Installation of the casing and gravel pack operations were completed December 14. The sanitary seal was placed December 16. Construction details are listed below and depicted in Figure 3.

TABLE 4. CONSTRUCTION SUMMARY FOR ENTRY MEADOW WELL

Casing Schedule	
Depth Interval (Feet)	Description
+2 to 350 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 blank steel well casing.
350 to 490 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 steel well casing with 0.100-inch aperture width louvered perforations, Ful-Flo™ pattern.
490 to 510 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 blank steel well casing.
510 to 590 feet	10¾-inch outside diameter (O.D.) x 0.250-inch wall thickness ASTM A135 steel well casing with 0.100-inch aperture width louvered perforations, Ful-Flo™ pattern. Steel plate welded to the bottom.
Other	
Centralizers	¼" x 2" x 2' steel, welded three around at 80-feet intervals, starting from the bottom.
Gravel pack	30 cubic yards ½" x ¼" size gravel formation stabilizer (provided by Chevereaux Sand and Gravel).
Gravel-fill pipe	3-inch pipe size steel pipe to a depth of 105 feet.
Sanitary seal	8 cubic yards of cement grout.

Initial well development commenced before the installation of the cement sanitary seal. It comprised removal of the residual drilling fluid from the well and hauling it from the site. The well was then dosed with SAPP to break down the clay "wall cake" which forms on the interior of the well bore followed by granular chorine to break down Magma Fiber™, an acid-soluble mineral fiber used to combat extreme loss of drilling fluid. The residual from these treatments was also removed by the contractor. Subsequent well development comprised alternately swabbing and air-lift pumping 10-foot lengths of the well screen. This work started at the bottom of the well and progressed upward to the top of the screened interval. Each 10-foot section of screen was repeatedly swabbed and air-lifted by the reverse circulation method until the discharge was free of residual formation material. The air-lift discharge was routed to tanks at the site to promote settling of suspended solids prior to discharging the supernatant fluid. Once this aspect of development was completed, the well was direct airlift pumped until the discharge was clean. Well development utilizing the drilling rig was completed December 22, 1995.



**NOTE:**

CASING GUIDES,  
3 ROUND EVERY  
80 FEET.

ST. JAMES VILLAGE  
ENTRY MEADOW WELL

**WELL DETAIL**

Final well development comprised surging the well with the test pump at rates of up to 500 gpm. This work commenced January 24, 1996. Developmental pumping was interrupted by a problem with the test pump. The pump was replaced and development was completed January 29, 1996. Alternately surging and pumping the well was continued until the discharge was clear after each surging episode and the sand content, measured with a Rossum<sup>t.m.</sup> sand tester was less than 5 p.p.m.

## TEST PUMPING SUMMARY

The Saint James's Village wells were test pumped using a 100 horsepower submersible turbine pump. The pump was powered by a 300 kilowatt generator driven by a diesel engine. Water levels in the pumped well and nearest observation well prior to, during, and after testing were measured with pressure transducers and the data were recorded by In-Situ, Inc. Hermit™ data loggers. These data were periodically transcribed as backup in the event of equipment failure. Water levels in more remote observation wells were measured manually using electric water-level sounders. Flow rates were measured via a circular pipe weir with a 4.375-inch by 6.250-inch orifice equipped with a piezometer tube.

### NADIA COURT WELL

Both the Nadia Court Well and the nearest observation well, test well SJ-4, were equipped with pressure transducers January 2, 1996 so as to record pre-testing water-level trends in the wells. Other observation wells included test wells SJ-2 and SJ-3 and the domestic well at the Petryszak residence.

#### Step-Drawdown Test

A step-drawdown test comprising four steps was planned. However, a problem with the test pump occurred at the start of the fourth step and the test was terminated within minutes of the end of the third step. After the test, the pump was pulled and the problem was found to result from plugging of the pump intake screen by gravel small enough to pass through the louvered perforations.

The results of the step-drawdown test are summarized below. Test data are plotted in Figure 4. Field data sheets and field plots of the data are provided in Appendix C.

Pre-testing water level - 196.95 feet below the measuring point (M.P. = top of stilling well, 2.2 feet above land surface).

Testing commenced - 0830 hours, 1/5/96.

Testing ended - 1132 hours, 1/5/96

Step	Duration, t (minutes)	Pumping rate, Q (gpm)	Drawdown, s (feet)	Specific capacity, C, (gpm/ft)
I	60	200	38.12	5.25
II	60	300	60.71	4.94
III	60	400	90.64	4.41

#### Constant-Discharge Test

The Nadia Court Well constant-discharge test was scheduled to last 10 days. However, the pump tripped a circuit breaker four hours before the test was scheduled to end. Fortunately, the pump quit seconds after the water sample was collected and personnel were on-hand to reset the Hermit to record closely-spaced early-time recovery data.

Testing commenced - 1430 hours 1/8/96.

Pre-testing water level - 197.46 feet below M.P.

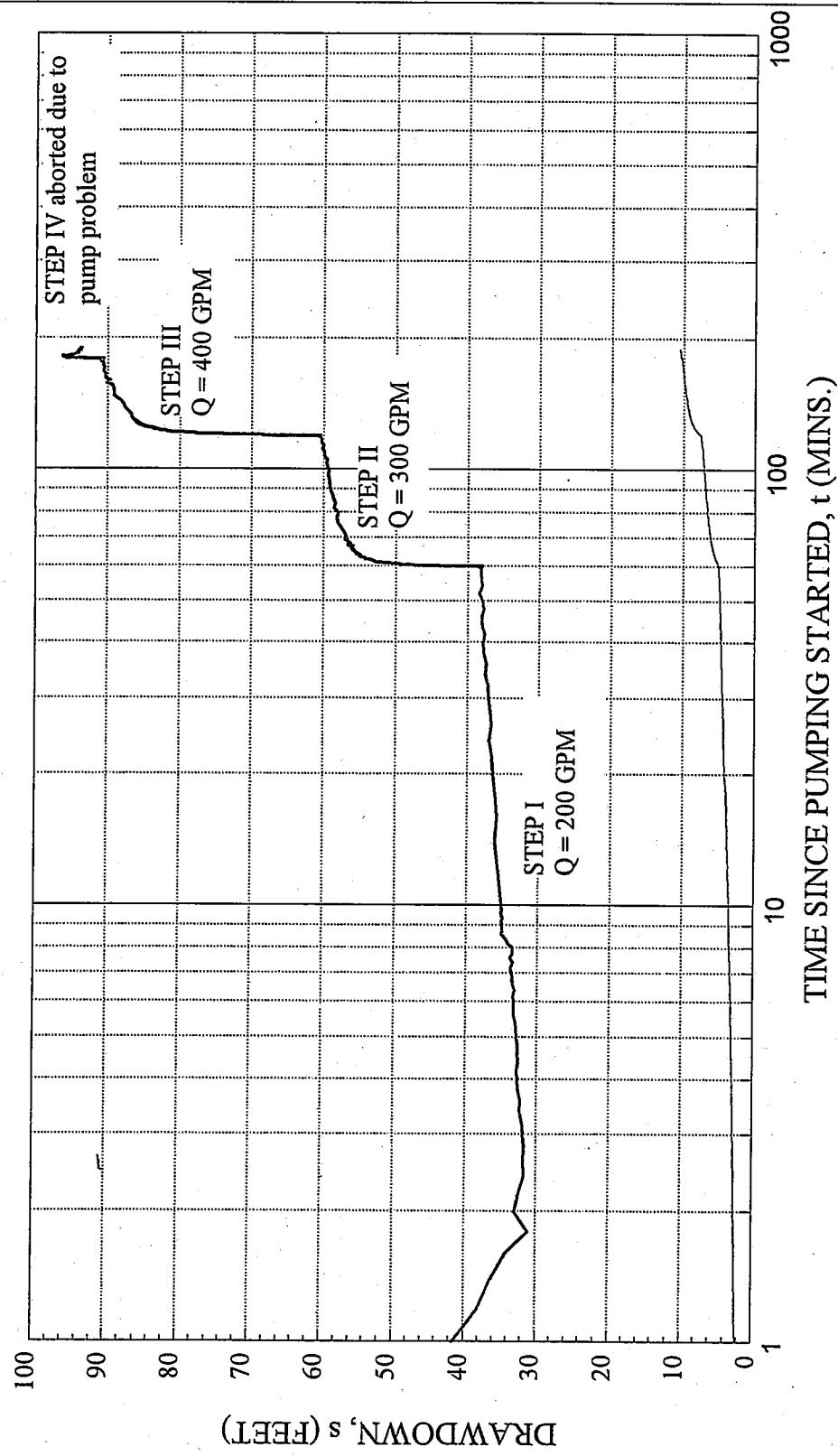
Pumping rate - 350 gallons per minute.

Testing ended - 1030 hours 1/18/96.

Test duration - 9 days, 20 hours.

Pumping water level at the end of the pumping test - 291 feet below M.P.

**Nadia Court Well**  
**Step-Drawdown Test**



— Nadia Court Well — SJ-4

FIGURE 4. NADIA COURT  
WELL STEP-DRAWDOWN  
TEST DATA.

Water levels in the Nadia Court Well and SJ-4 were monitored for five days after the conclusion of the pumping test, after which the equipment was moved to the Entry Meadow Well site. The complete set drawdown and residual-drawdown data for the Nadia Court Well and SJ-4 are plotted in Figures 5 and 6, respectively.

## ENTRY MEADOW WELL

Both the Entry Meadow Well and the nearest observation well, test well SJ-3, were equipped with pressure transducers January 23, 1996 so as to record pre-testing water-level trends in the wells. Other observation wells included test wells SJ-2 and SJ-4 and the domestic well at the Petryszak residence.

### Step-Drawdown Test

A step-drawdown test comprising four steps was executed. The results of the step-drawdown test are summarized below. The step-drawdown test data are plotted in Figure 7. Field data sheets and field plots of the data are provided in Appendix C.

Pre-testing water level - 244.59 feet below the measuring point (M.P. = top of casing, 2.0 feet above land surface).

Testing commenced - 0900 hours, 1/30/96.

Testing ended - 1300 hours, 1/30/96.

Step	Duration, t (minutes)	Pumping rate, Q (gpm)	Drawdown, s (feet)	Specific capacity, C <sub>s</sub> (gpm/ft)
I	60	200	28.56	6.90
II	60	300	48.18	6.23
III	60	400	69.26	5.78
IV	60	500	93.01	5.38

### Constant-Discharge Test

The Entry Meadow Well constant-discharge test ran for a period of 10 days even though the diesel power unit experienced an oil leak soon after the test started. Sargent's crew monitored oil consumption closely during the first eight days of the test and continuously during the last two days to ensure that the test ran its course. The results of the test are summarized below.

Testing commenced - 1000 hours 1/31/96.

Pre-testing water level - 244.05 feet below M.P.

Pumping rate - approximately 400 gallons per minute\*.

Testing ended - 1000 hours 2/10/96.

Test duration - 10 days.

Pumping water level at the end of the pumping test - 350.95 feet below M.P.

Note - after five days of pumping, melting snow caused the reference point for the piezometer to shift. By the end of the test, the displacement was about 2 inches, resulting in a gradual, step-wise increase in discharge to 414 gpm.

The complete set of drawdown and residual-drawdown data for the Entry Meadow Well and SJ-3 are provided in Figures 8 and 9, respectively, and the drawdown data for the Petryszak Well are plotted in Figure 10. No drawdown was observed in either SJ-2 or the Nadia Court Well. Changes in water level in these wells during the test were solely the result of changes in barometric pressure. The field data sheets and field data plots are provided in Appendix C.

**Nadia Court Well**  
**Constant-Discharge Test**

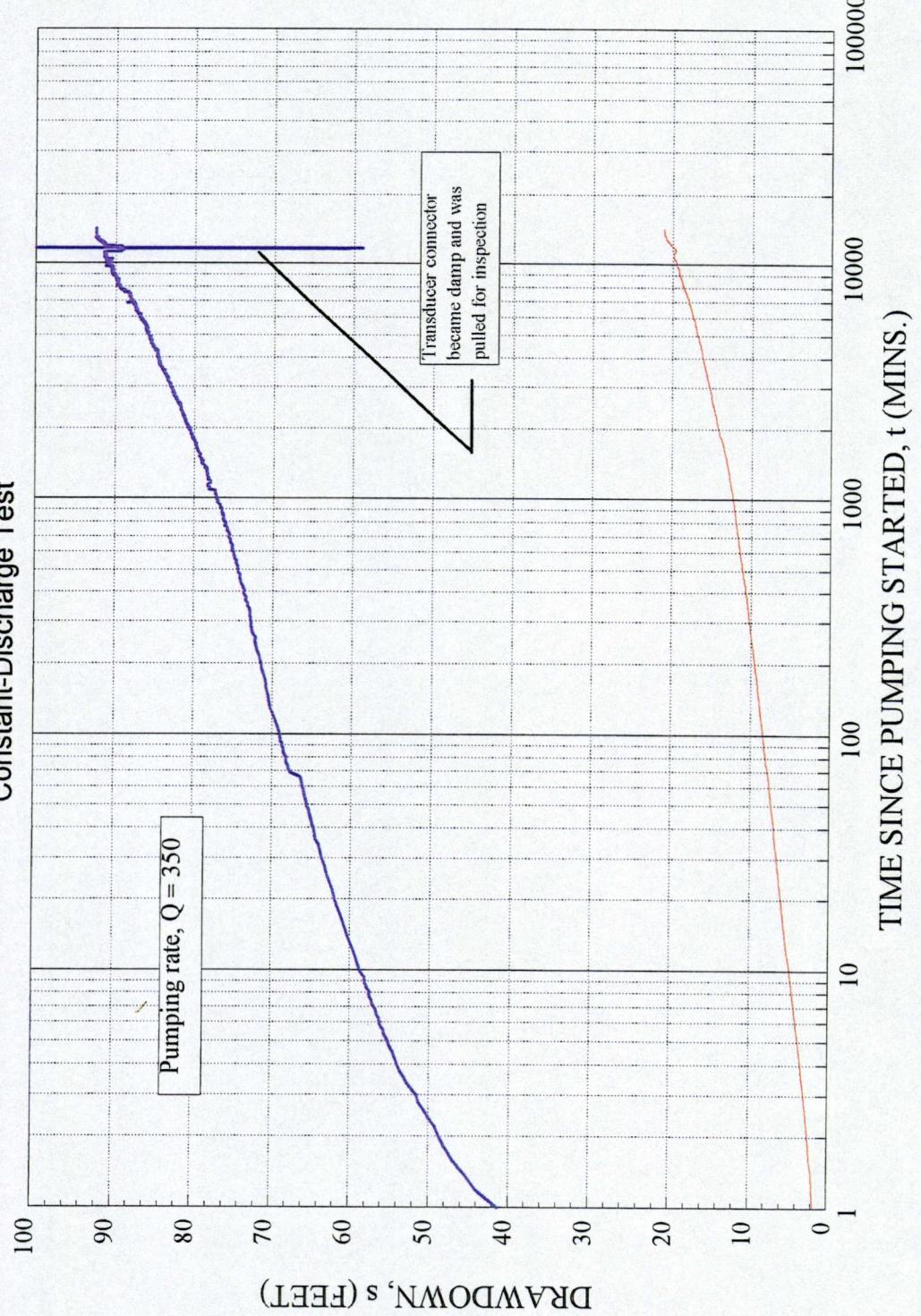


FIGURE 5. NADIA COURT WELL  
CONSTANT- DISCHARGE  
PUMPING TEST DRAWDOWN  
DATA

— Nadia Court Well — SJ-4

## Nadia Court Well Constant-Discharge Test

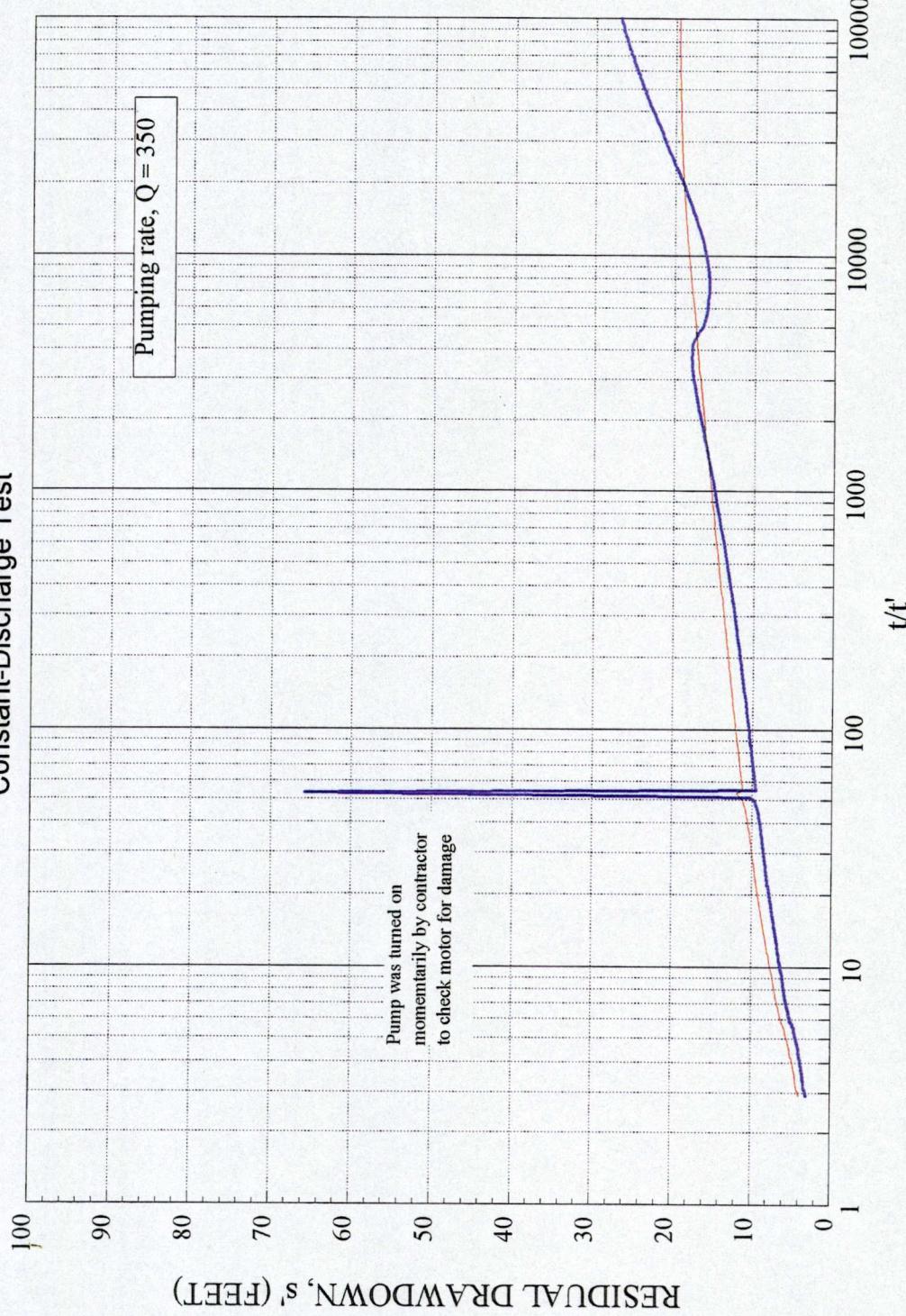


FIGURE 6. NADIA COURT WELL  
CONSTANT- DISCHARGE PUMPING  
TEST RESIDUAL DRAWDOWN  
DATA.

## Entry Meadow Well Step-Drawdown Test

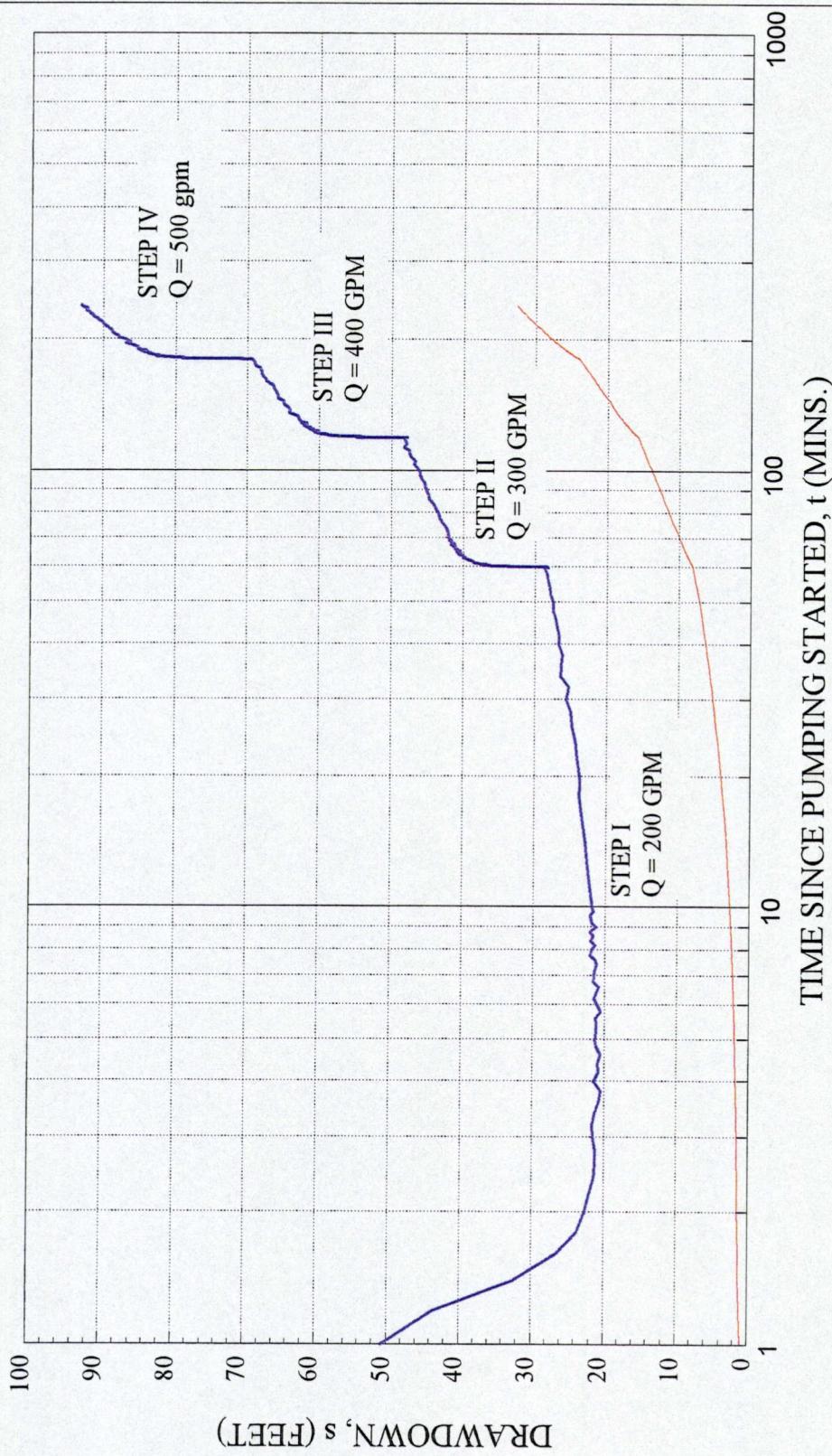


FIGURE 7. ENTRY MEADOW  
WELL STEP-DRAWDOWN  
TEST DATA.

— Entry Meadow Well — SJ-3

**Entry Meadow Well**  
**Constant-Discharge Test**

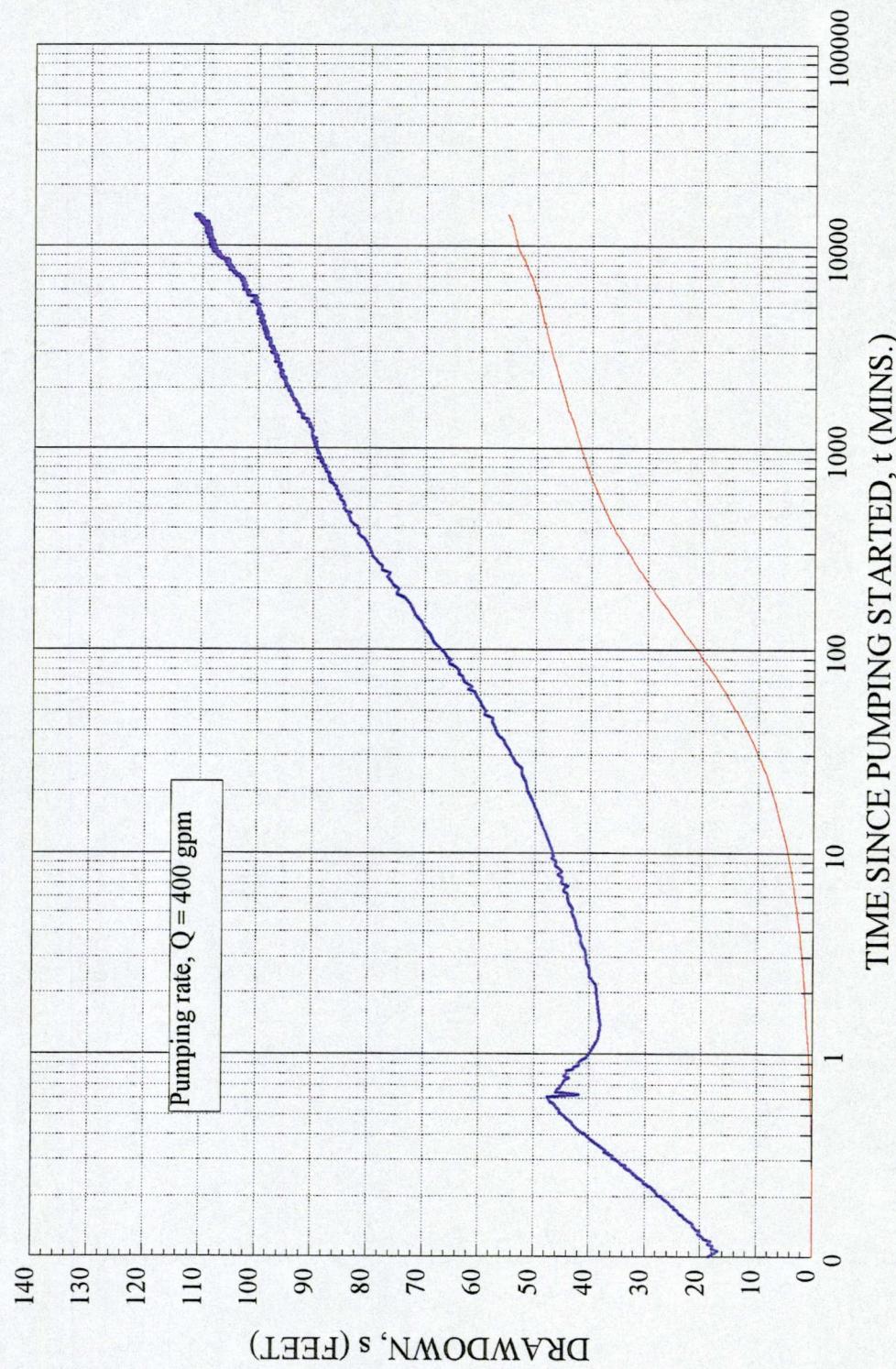


FIGURE 8. ENTRY MEADOW  
WELL CONSTANT-DISCHARGE  
TEST DRAWDOWN DATA.

— Entry Meadow Well — SJ-3

**Entry Meadow Well**  
**Constant-Discharge Test**

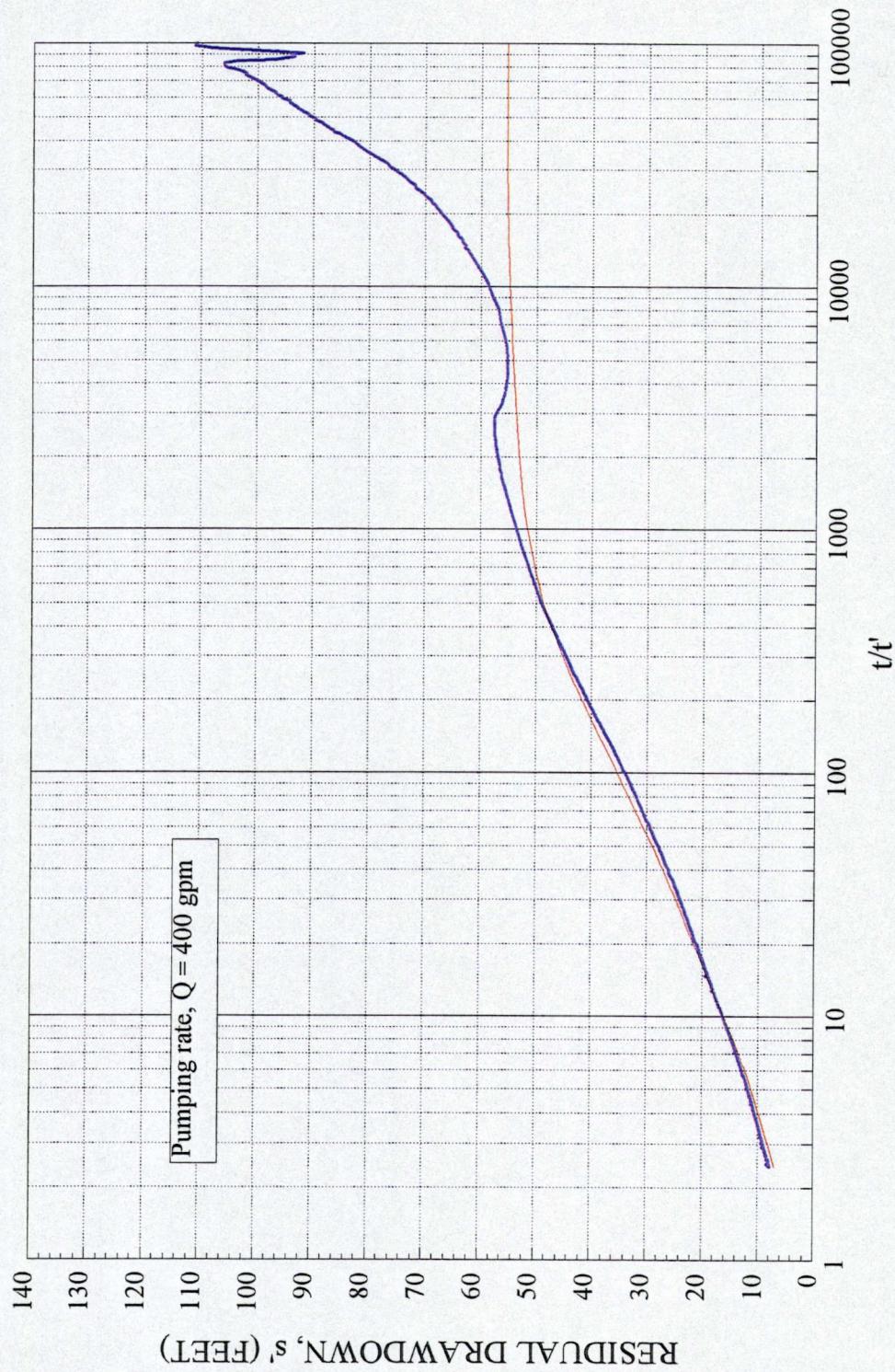


FIGURE 9. ENTRY MEADOW  
WELL CONSTANT-DISCHARGE  
TEST RESIDUAL-DRAWDOWN  
DATA.

**Entry Meadow Well**  
**Constant-Discharge Test**

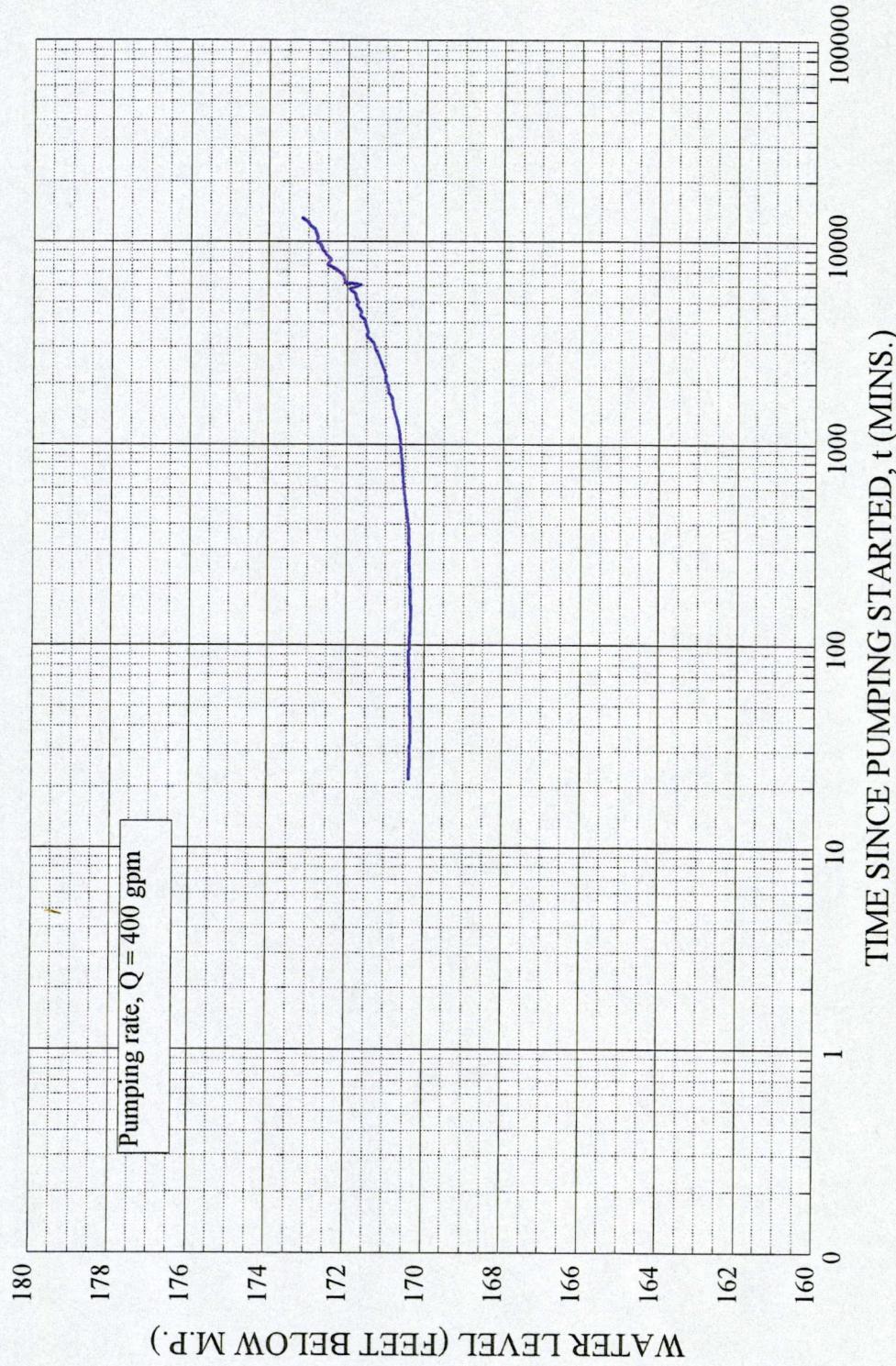


FIGURE 10. ENTRY MEADOW WELL  
CONSTANT-DISCHARGE TEST DRAWDOWN  
DATA FOR THE PETRYSZAK WELL..

## ANALYSIS OF THE AQUIFER STRESS TEST DATA

A field analysis of the drawdown data for the wells was made as testing progressed using the Cooper-Jacob method (Driscoll, 1986). This preliminary analysis was followed by a more comprehensive field analysis utilizing the computer program WHIP™ (Well Hydraulics Interpretation Package ver. 3.22; Hydro-Geo Chem, Inc., 1988) later in the test as more data became available. Final analysis of the drawdown data was accomplished after the conclusion of the monitored recovery period of the test so that the results of the drawdown and recovery phases of the test could be compared using WHIP. The recovery analysis incorporated "calculated" recovery data (Driscoll, 1986) instead of residual-drawdown data. Calculated recovery data tend to yield results which are more consistent with those obtained from drawdown data than residual-drawdown data, especially when the aquifer is relatively complex. That is, when the physical nature of the aquifer varies significantly from the assumptions of uniformity, isotropy and infinite aerial extent, all of which are inherent in most common analytical models.

### NADIA COURT

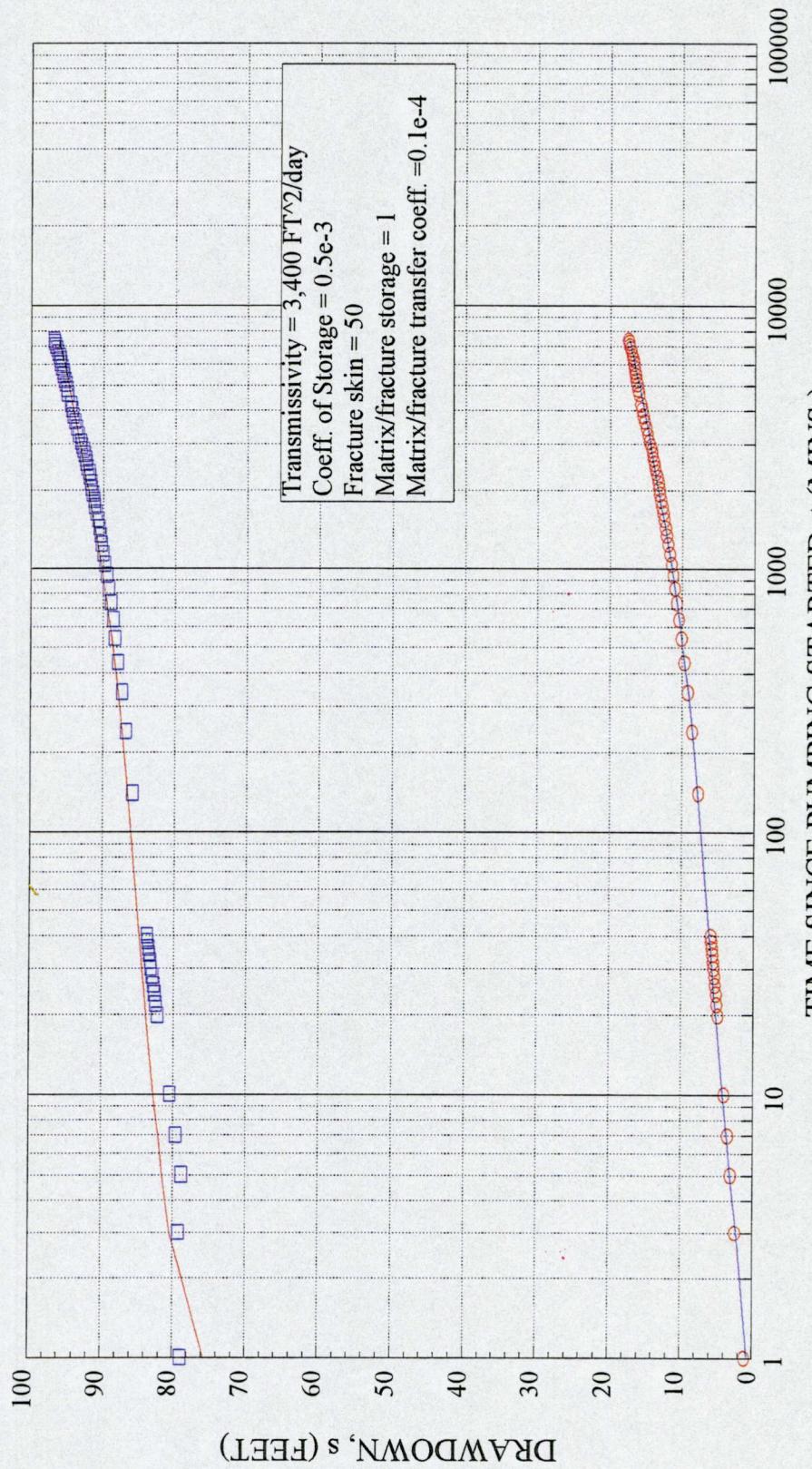
The geologic and geophysical logs for the Nadia Court Well and SJ-4 indicate that the water-bearing horizons are separated by relatively impermeable geologic materials such as volcanic mudflows. The Nadia Court Well and SJ-4 are completed with perforations at different, yet overlapping intervals. The perforated interval in the Nadia Court Well extends from a depth of 262 feet to 620 feet below the land surface. The perforated interval in SJ-4 starts at 240 feet. Although the perforations extend to a depth of 380 feet, the well is filled in to depth of about 280 feet so that the lower portion of the well may not be hydraulically connected to the aquifer.

Two different analytical models were applied to the data based on the relative depths of the wells and the physical nature of the aquifer advanced from the borehole data. One analytical model describes a vertically anisotropic aquifer wherein the pumped well and the nearby observation well both partially penetrate the aquifer. The other analytical model represented a dual-porosity aquifer (Muench, 1984) wherein pumping the well elicits an initial elastic response in the fractures, followed by gravity drainage of groundwater from the porous matrix. Because the wells are completed in fractured rock and the fractured horizons are separated by porous media, this approach is just as applicable. The effect of dewatering the aquifer in the vicinity of the pumped wells was also taken into consideration in both analytical approaches.

The presence of impermeable boundaries is both indicated and implied by the data. The distance to one boundary, presumably a fault, was calculated to be in the neighborhood of 1,000 feet from the Nadia Court Well, but its precise location could not be determined. The fault may lie between the Nadia Court Well and the well at the Petryszak residence. The evidence for this conclusion is the slight response in the Petryszak Well during the testing of the Nadia Court Well and the very obvious response in the Petryszak Well during the Entry Meadow Well pumping test. However, this particular boundary was not observed during testing of the Entry Meadow Well. This apparent discrepancy may be explained if the boundary is immediately to the west of both the Entry Meadow and Petryszak wells and, therefore, transparent since its presence would be masked by well-bore storage and other early-time influences. A north-trending lineation in the topography immediately west of these wells (refer to Figure 1) may well represent a fault that acts as an impermeable boundary. The presence of a boundary between the Nadia Court Well and the Entry Meadow Well is further suggested by the lack of response in the Nadia Court Well when the Entry Meadow Well was test pumped.

The best fit of both simulated drawdown and recovery data to the observed data for the Nadia Court test was achieved using a Transmissivity equal to 3,400 feet<sup>2</sup>/day, a Coefficient of Storage equal to 0.0005 and a very large fracture skin. A relatively good match between the observed and simulated drawdown data for the Nadia Court Well and SJ-4 was achieved (refer to Figure 11). A good match between the observed and simulated recovery data for SJ-4 was also achieved (refer to Figure 12). However, the simulated recovery for the Nadia Court Well did not match very well, particularly for early time. No one model or single set of aquifer properties resulted in a satisfactory match between all of the observed and simulated data.

**Nadia Court Well**  
**Constant-Discharge Test**



□ Nadia Crt. obs'd. s — Nadia Crt. calc'd. s ○ SJ-4 obs'd. s — SJ-4 calc'd. s

FIGURE 11. OBSERVED AND  
 SIMULATED DRAWDOWN FOR THE  
 NADIA COURT WELL AND SJ-4.

**Nadia Court Well**  
**Constant-Discharge Test**

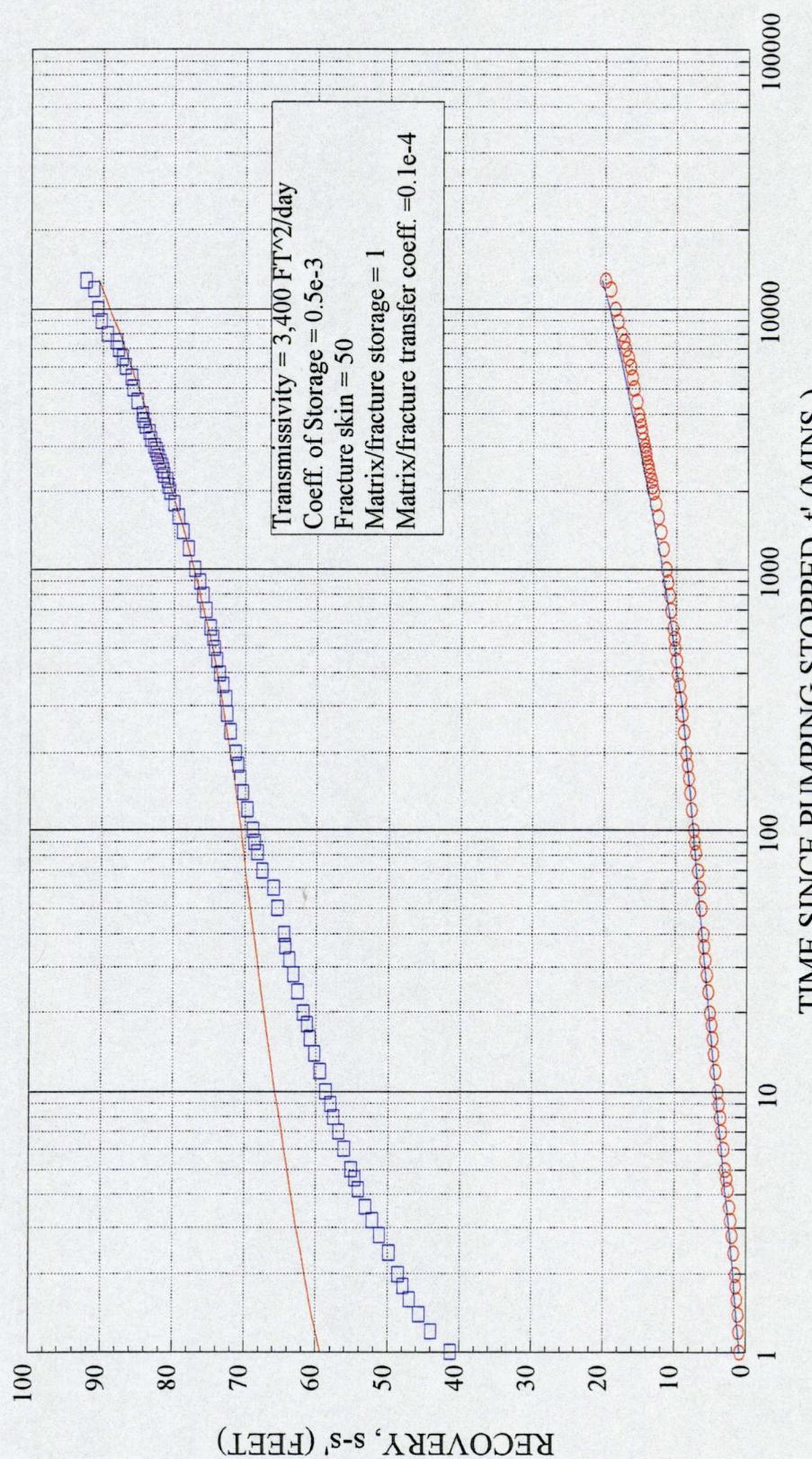


FIGURE 12. OBSERVED AND  
 SIMULATED RECOVERY FOR THE  
 NADIA COURT WELL AND SJ-4.

Of the observation wells, only the Petryszak well may have responded to the pumping of the Nadia Court Well. However, the data did not lend themselves to comprehensive and definitive analysis, particularly because the drawdown was small in comparison to barometric effects and nothing is known about how the well is constructed.

#### ENTRY MEADOW WELL

The aquifer near the Entry Meadow Well is similar in character to the aquifer near the Nadia Court Well in that the water-bearing horizons are separated by relatively impermeable geologic units. Partial penetration of the aquifer by the Entry Meadow Well was also expected to be a factor since the top of the perforated interval in the Entry Meadow Well is 70 feet deeper than the top of the perforations in the observation well SJ-3.

The best fit of both simulated drawdown and recovery data to the observed data for the Entry Meadow Well test was achieved using a Transmissivity equal to 2,400 feet<sup>2</sup>/day, a Coefficient of Storage equal to 0.00018, and a Specific Leakage of  $1 \times 10^{-5}$ /day. A relatively good match between the observed and simulated drawdown data for the Entry Meadow Well and SJ-3 was achieved (refer to Figure 13) assuming a large negative skin factor and large effective well radius. The large negative skin factor may have resulted from the extensive developmental work which was undertaken on the well. A fair match between the observed and simulated recovery data for the Entry Meadow was also achieved (refer to Figure 14). However, the simulated recovery for SJ-3 did not match the observed data very well. No one model or single set of aquifer properties resulted in a satisfactory match between all of the data.

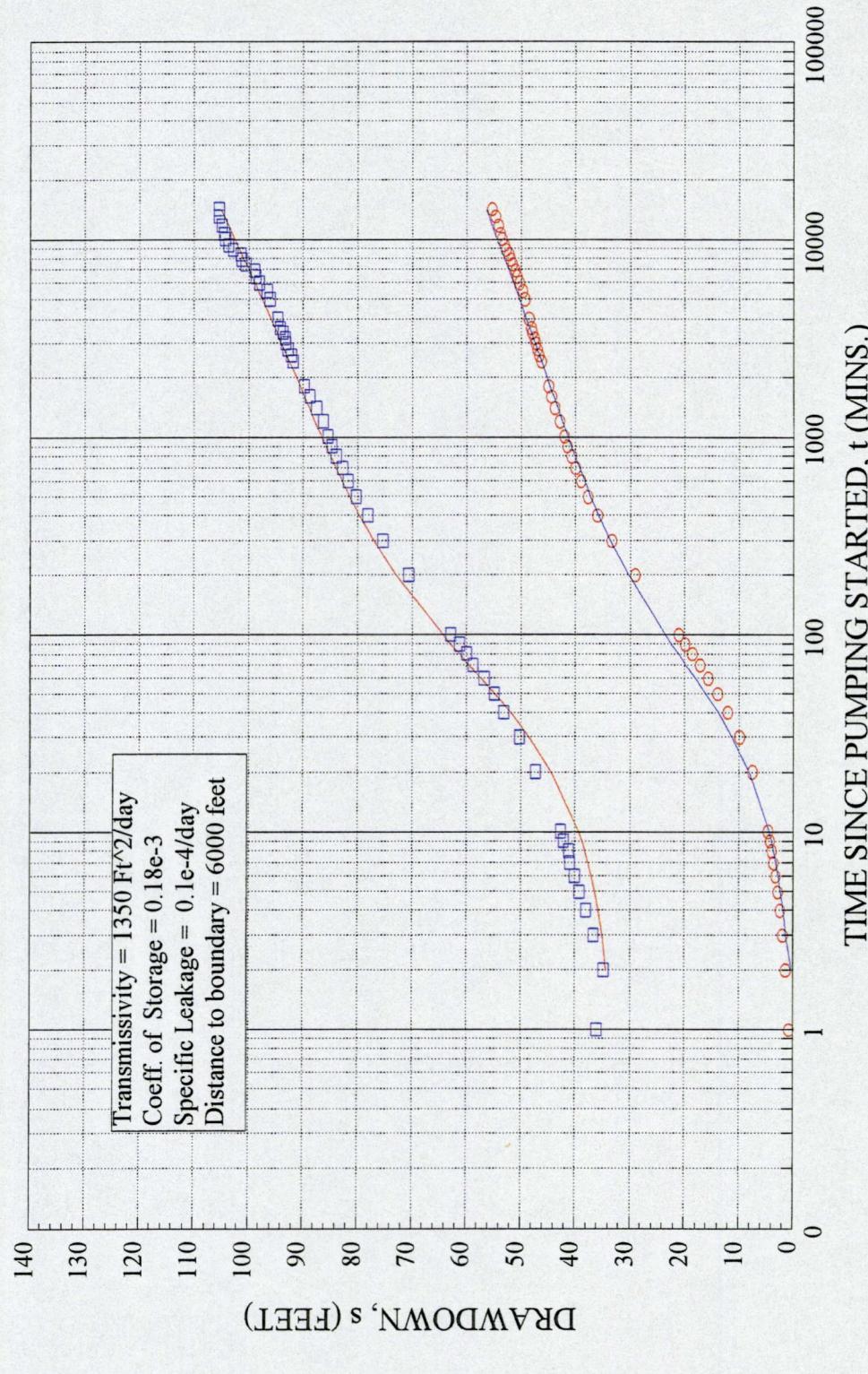
One discharge boundary approximately 6,000 feet from the Entry Meadow well was indicated by the data but its precise location could not be determined from the data. As discussed above, there may be a boundary immediately west of the Entry Meadow Well and the Petryszak Well that is so close so as to be transparent. If this is so, then the transmissivity is double the calculated value.

Neither SJ-2 nor the Nadia Court Well responded to pumping the Entry Meadow Well. They only responded to changes in barometric pressure. The Petryszak well did respond to pumping the Entry Meadow Well. Analysis of the drawdown data yielded a transmissivity of 4,100 ft<sup>2</sup>/day and a coefficient of storage of 0.003 (see Appendix C). Further analysis was not attempted due to the absence of a driller's report for the well. In addition, the well was over topped by overland flow from storm runoff. As a result, it was pumped extensively by the owner for about one day and affected its usefulness as an observation well.

TABLE 5. AVERAGE AQUIFER PROPERTIES FROM NADIA COURT & ENTRY MEADOW WELLS AQUIFER STRESS TESTS.

WELL	TRANSMISSIVITY (Feet <sup>2</sup> /day)	COEFFICIENT OF STORAGE
Nadia Court	3,400	0.0005
Entry Meadow	2,400	0.00018

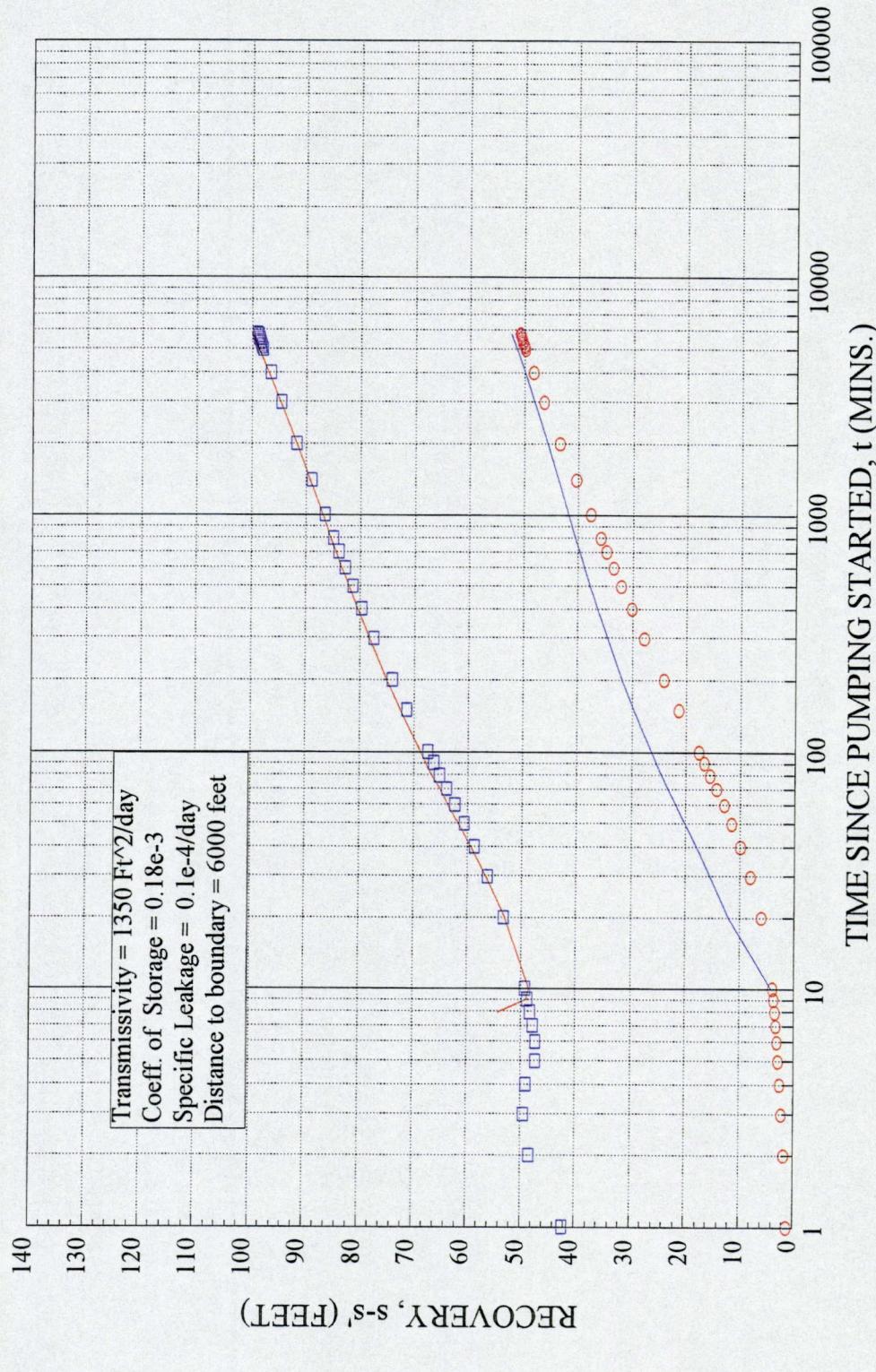
**Entry Meadow Well**  
**Constant-Discharge Test**



Legend:  
□ Entry Meadow Well obs'd. s    ○ SJ-3 obs'd. s  
— Entry Meadow calc'd. s    — SJ-3 calc'd. s

FIGURE 13. OBSERVED AND SIMULATED  
DRAWDOWN FOR THE ENTRY MEADOW  
WELL CONSTANT-DISCHARGE TEST.

## Entry Meadow Well Constant-Discharge Test



Legend:

- Entry Meadow Well obs'd. s (Blue square)
- Entry Meadow calc'd. s (Red line)
- SJ-3 obs'd. s (Orange circle)
- SJ-3 calc'd. s (Blue line)

FIGURE 14. OBSERVED AND SIMULATED RECOVERY FOR THE ENTRY MEADOW WELL CONSTANT-DISCHARGE TEST.

## WATER QUALITY

Water samples were collected from the Nadia Court and Entry Meadow Wells prior to terminating the pumping tests. The concentration of major chemical constituents, trace metals, and radio nuclides are given below in Table 6. The laboratory reports for all constituents are provided in Appendix D.

TABLE 6. WATER CHEMISTRY DATA FOR NADIA COURT AND ENTRY MEADOW WELLS			
Constituent	Well		Drinking Water Standard
	Nadia Court	Entry Meadow	
Sample date	1/18/86	2/8/96	
Sample time	1000 hrs	1245 hrs	
Temperature (°F)	56	56.8	
Electrical conductivity ( $\mu\text{mho}/\text{cm}$ ) (Field)	270	212	
pH (std. units)	6.8	6.89	6.5-8.5 <sup>(3)</sup>
Turbidity (NTU)	0.60	0.10	1.0 <sup>(2)</sup>
Color (APU)	<5	<5	15 <sup>(3)</sup>
MBAS	<0.05	<0.05	0.5 <sup>(3)</sup>
Total Dissolved Solids	202	166	500/1000 <sup>(3)</sup>
Major cations			
Calcium	23	19	
Magnesium	16	12	125/250 <sup>(3)</sup>
Sodium	12	12	
Potassium	4.8	4.2	
Major anions			
Alkalinity (mg/l CaCO <sub>3</sub> )	125	102	
Sulfate	6.2	0.4	250/500 <sup>(3)</sup>
Chloride	1.5	1.3	250/400
Nitrate (as N)	0.2	0.1	10 <sup>(2)</sup>
Nitrite (as N)	<0.02	<0.02	
Cyanide (total)	<0.005	<0.005	
Trace metals			
Fluoride	<0.1	<0.1	2.0/4.0 <sup>(2,4)</sup>

Constituent	Well		Drinking Water Standard
	Nadia Court	Entry Meadow	
Antimony	<0.002	<0.002	
Arsenic	0.006	<0.005	0.05 <sup>(2)</sup>
Barium	0.10	0.09	1.0 <sup>(2)</sup>
Beryllium	<0.0002	<0.0002	
Cadmium	<0.0002	<0.0002	0.01 <sup>(2)</sup>
Chromium	<0.02	<0.02	0.05 <sup>(2)</sup>
Copper	<0.02	<0.02	1.0 <sup>(3)</sup>
Iron	0.04	0.02	0.03/0.06 <sup>(3)</sup>
Lead	<0.002	<0.002	0.05 <sup>(2)</sup>
Manganese	<0.01	<0.01	0.05/0.1 <sup>(3)</sup>
Mercury	<0.0005	<0.0005	0.002 <sup>(2)</sup>
Nickel	<0.04	<0.04	
Selenium	<0.001	<0.001	0.01 <sup>(2)</sup>
Silver	<0.0005	<0.0005	0.05 <sup>(2)</sup>
Thallium	<0.0005	<0.0005	
Zinc	<0.02	0.04	5.0 <sup>(3)</sup>
Radio nuclides			
Gross $\alpha$ (pCi/l)	4.0	1.4	15 <sup>(2)</sup>
Gross $\beta$ (pCi/l)	9.9	4.4	50 <sup>(2)</sup>
Radon		n.a. <sup>(5)</sup>	
Uranium	0.0035		
Volatile Organic and Synthetic Organic Compounds			
U.S.E.P.A. Methods 504, 505, 507, 515.1, 524, 525, 531.1, 547, 548, & 549	Not Detected <sup>(1)</sup>	Not Detected <sup>(1)</sup>	
Notes: 1. Refer to Appendix for complete analytical results, detection limits, and maximum contaminant levels for VOCs & SOCs. 2. Primary Drinking Water Standard. 3. Secondary Drinking Water Standard (recommended/maximum concentration). 4. Temperature dependent. 5. Not available. A sample was collected, but the volume of the sample bottle provided by S.E.M. was insufficient for the analysis of radon by Berringer Labs.			

The groundwater derived from the Nadia Court Well meets all State of Nevada and Federal drinking water standards. No volatile organic compounds (VOCs) or synthetic organic compounds (SOCs) were detected. The overall chemical quality of the groundwater derived from the wells is very good although it is moderately hard. It may be classified as a mixed-cation-bicarbonate water type.

## **YIELD RATING OF THE WELLS**

The criteria for rating the long-term yield of the wells is somewhat subjective. One subjective criteria is to limit the pumping level to the top of the perforations. The rationale behind this limit is to minimize the potential for entrained air in the discharge which might result from cascading water. However, it may not be appropriate in light of empirical data.

### **NADIA COURT WELL**

The pumping test for the Nadia Court Well provided empirical evidence that air is not entrained in the discharge even when the pumping level is as deep as 27 feet below the top of the perforations. This occurs when the pumping level is approximately 289 feet below the land surface, a drawdown of about 95 feet. The yield rating of the Nadia Court well is, therefore, based on limiting the pumping water level to a depth of 289 feet.

The long-term pumping level in the Nadia Court Well was calculated using the computer program WHIP assuming the properties of the well and aquifer determined from the pumping test. A conservative approach was taken in that a low value of aquifer transmissivity (2,400 feet<sup>2</sup>/day versus an average of 3,400 feet<sup>2</sup>/day) was assumed for the analysis and the effects of leakage were ignored. A transmissivity of 2,400 feet<sup>2</sup>/day is representative of the portion of the aquifer in direct communication with the screened interval of the well. Figure 15 shows the anticipated drawdown in the Nadia Court at pumping rates of 275, 300, 325 and 350 gallons per minute after 90 days of continuous pumping. From these results the Nadia Court Well is rated to yield approximately 325 gpm under the condition that pumping is continuous for 90 days. The drawdown at this rate and time will be about 95 feet and the pumping water level is projected to be approximately 289 feet below the land surface.

The recommended pump setting is between the depths of 382 and 402 feet where blank casing was placed in anticipation of housing the production pump.

### **ENTRY MEADOW WELL**

The perforations in the Entry Meadow Well start at a depth of 349 feet below the land surface. The maximum pumping water level in the well during testing was approximately 351 feet below the land surface. In the absence of empirical data for pumping levels greater than 350 feet, this depth is the criteria for rating the yield of the well.

The long-term pumping level in the Entry Meadow Well was also calculated using the computer program WHIP assuming the properties of the well and aquifer determined from the pumping test. A value of aquifer transmissivity equal to 2,400 feet<sup>2</sup>/day was assumed for the analysis and the effect of leakage was included. Figure 16 shows the anticipated drawdown in the Entry Meadow Well at pumping rates of 325, 350, 375 and 400 gallons per minute after 90 days of continuous pumping. From these results the Entry Meadow Well is rated to yield approximately 390 gpm under the condition that pumping is continuous for 90 days. The drawdown at this rate and time will be about 105 feet and the pumping water level will be approximately 350 feet below the land surface.

The recommended pump setting is between the depths of 490 and 510 feet where blank casing was placed in anticipation of housing the production pump.

## Nadia Court Well

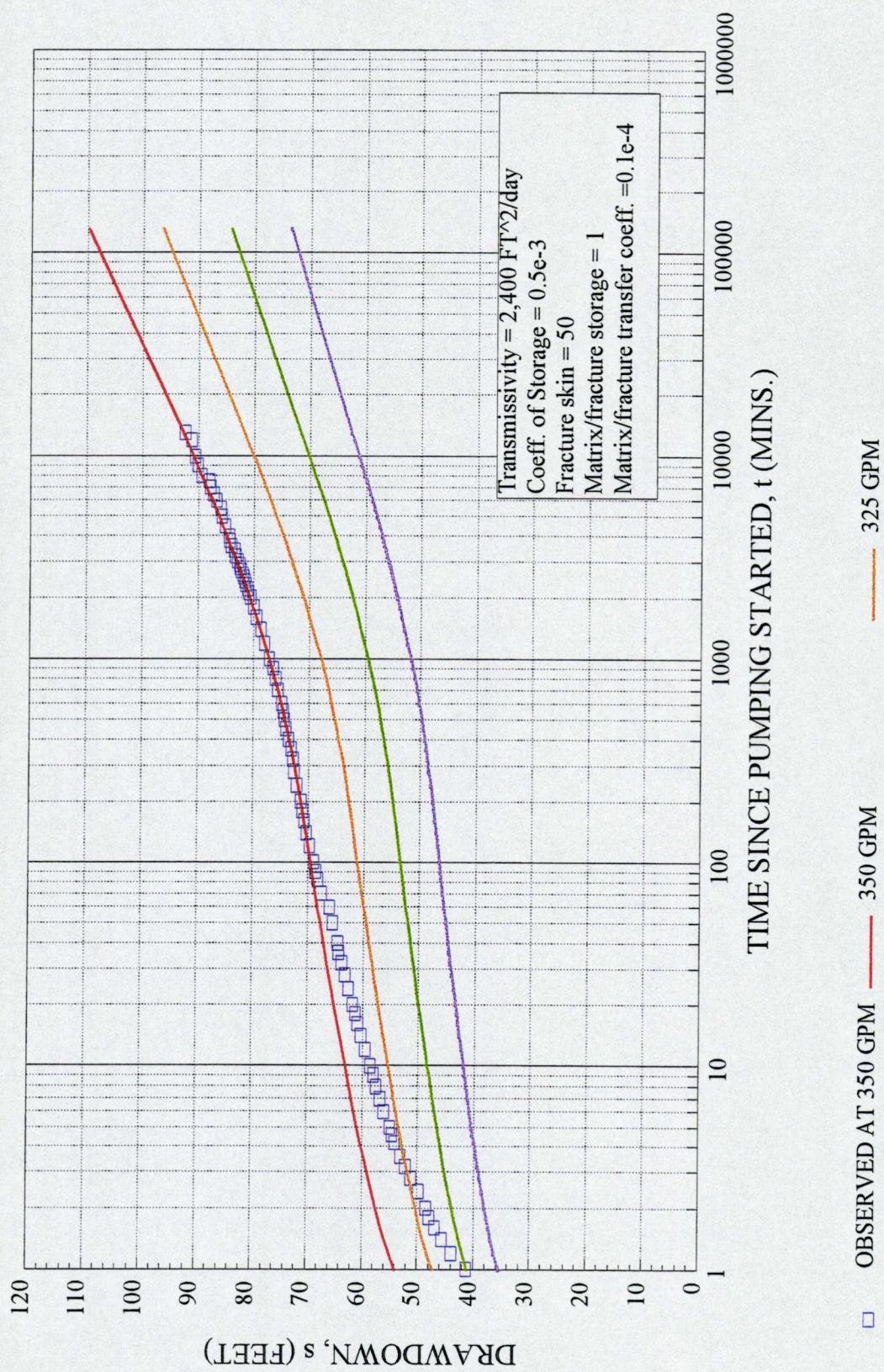


FIGURE 15 . PROJECTED DRAWDOWN IN THE NADIA COURT WELL AFTER 90 DAYS OF CONTINUOUS PUMPING.

## Entry Meadow Well

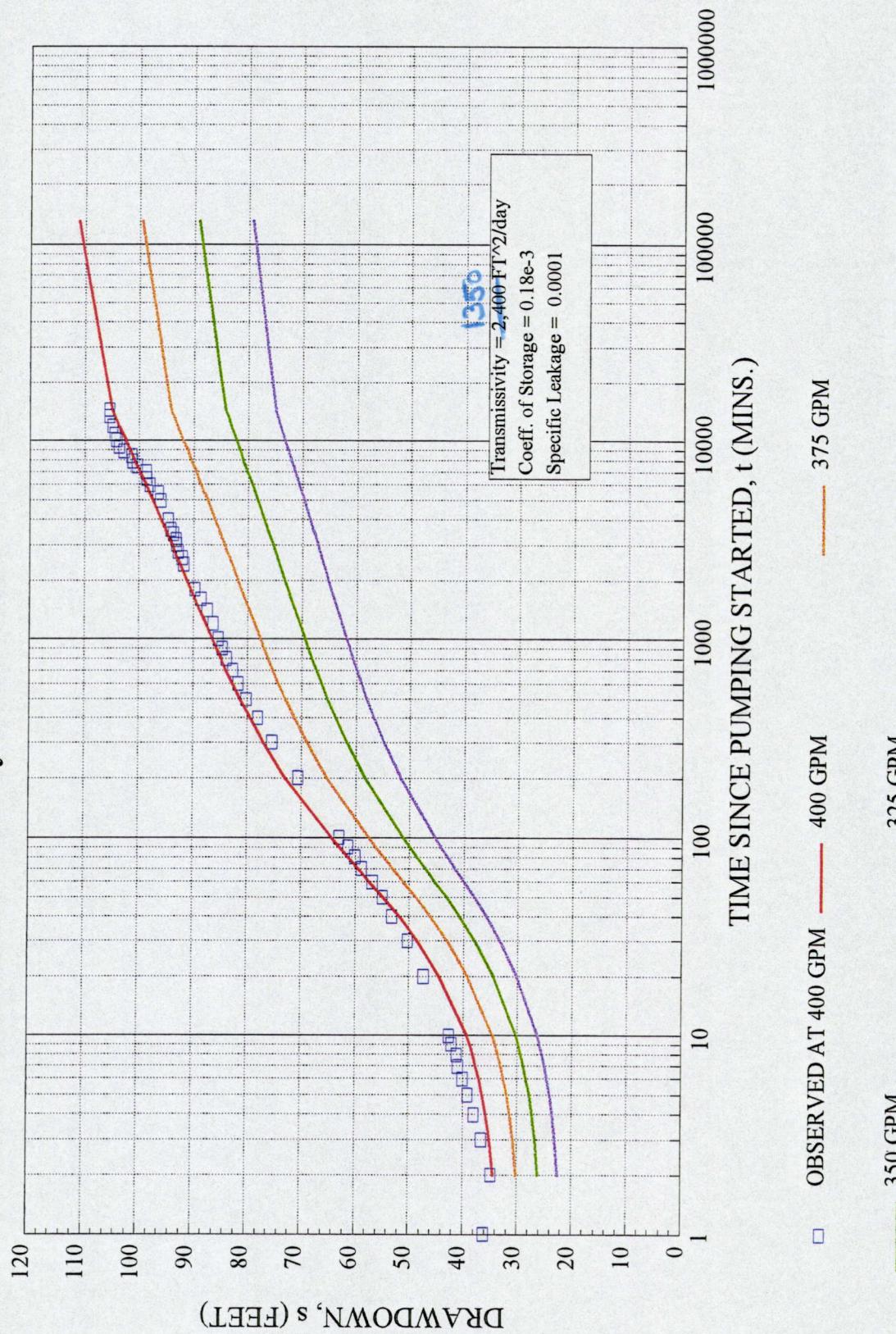


FIGURE 16 . PROJECTED DRAWDOWN IN THE ENTRY MEADOW WELL AFTER 90 DAYS OF CONTINUOUS PUMPING.

## SOURCES OF INFORMATION

CES, 1995. "*Draft Investigation of Mt. Rose Service Area*": consulting report prepared for Washoe County Department of public Works, Utility Division.

Driscoll, F., 1986. Groundwater and Wells: Johnson Filtration Systems, Inc., 1089 p.

Hydro-Geo Chem, 1988. Whip<sup>TM</sup> version 3.22 (Well Hydraulics Interpretation Package): computer program.

Moench, F., 1984. "Double porosity models for a fissured groundwater reservoir with fracture skin": Water Resources Research 20 (7), pp. 831-846.

Widmer, M. 1993[?]. "St. James'[s] Exploratory Drilling October-December 1993": report prepared by Washoe County Department of Public Works, Utility Division.

**APPENDIX A**  
**WELL CONSTRUCTION SUMMARIES AND LOGS OF BOREHOLES**

WHITE - DIVISION OF WATER RESOURCES  
CANARY - COUNTY COPY  
PINK - WELL DRILLER'S COPY

STATE OF NEVADA  
DIVISION OF WATER RESOURCES  
WELL DRILLER'S REPORT

PRINT OR TYPE ONLY  
DO NOT WRITE ON BACK

1. OWNER: JAMES VILLAGE  
MAILING ADDRESS 11766 WILSHIRE BLVD  
SUITE 700, LOS ANGELES, CA. 90025

2. LOCATION: SW 10 17 RISK 19, WASHOE  
PERMIT NO. 31940

Issued by State Resources

ADDRESS AT WELL LOCATION  
NATIA COURT AND JOY LAKE ROAD

NOTICE OF INTENT NO 31940

OFFICE USE ONLY  
Log No. 51442  
Permit No.  
Basin.....

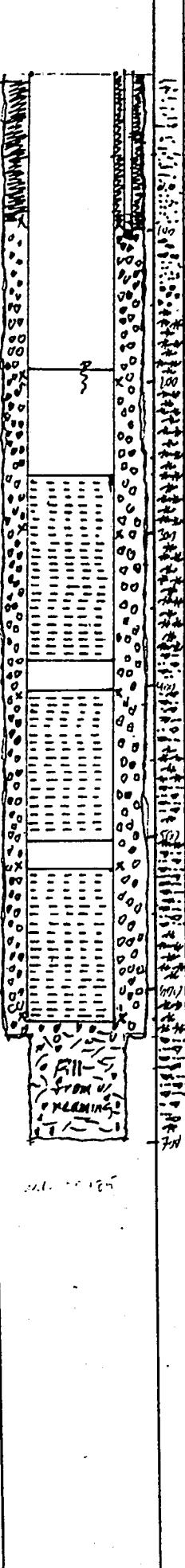
3.	WORK PERFORMED	4.	PROPOSED USE	5.	WELL TYPE					
<input checked="" type="checkbox"/> New Well <input type="checkbox"/> Deepen	<input type="checkbox"/> Replace <input type="checkbox"/> Abandon <input type="checkbox"/> Other.....	<input type="checkbox"/> Domestic <input checked="" type="checkbox"/> Municipal/Industrial <input type="checkbox"/> Monitor	<input type="checkbox"/> Irrigation <input type="checkbox"/> Stock	<input type="checkbox"/> Test <input type="checkbox"/> Stock	<input type="checkbox"/> Cable <input type="checkbox"/> Air <input checked="" type="checkbox"/> RVC <input type="checkbox"/> Other.....					
6. LITHOLOGIC LOG		8. WELL CONSTRUCTION								
Material	No. & Seq.	From	To	Thickness	Depth Drilled. 620 Feet Depth Cased. 620 .....					
SANDY GRANITE		0	71	71	HOLE DIAMETER (BBL SIZE)					
SOFT SANDY CLAY		71	78	7	From To					
FRACTURED ROCK		78	88	10	12 inches 0 feet 700 feet					
GRAVEL, 1/2" TRACE CLAY		88	135	47	18 inches 0 feet 620 feet					
HARD ROCK		135	162	27	.....Inches.....Feet.....Feet.....Feet.....Feet					
HARD BLACK ROCK		162	222	60	9. CASING SCHEDULE					
FRACTURED ROCK		222	230	8	Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)	
BLACK ROCK TRACE CLAY		230	236	6	10	22.36	.250	+ 2	260	
FRACTURED BLACK ROCK		236	240	4	10	22.36	.250	380	400	
BLACK ROCK, FRACTURED CLAY		240	260	20	10	22.36	.250	500	520	
LOST CIRCULATION		260	265	5	Perforations: LOUVERED-FUL FLOW					
HARD ROCK W/ CLAY		260	299	39	Type perforation: .125					
RED CLAY		299	300	1	Size perforation: .125					
BLACK ROCK		300	338	38	From. 260 feet to. 380 feet					
BLACK ROCK W/ CLAY		338	360	22	From. 400 feet to. 500 feet					
BLACK ROCK, LG. FRACTURES		360	366	6	From. 520 feet to. 620 feet					
HARD BLACK ROCK		366	374	8	From. . . . . feet to. . . . . feet					
FRACTURED BLACK ROCK		374	384	10	Surface Seal: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Seal Type:					
RED CLAY & ROCK		384	390	6	Depth of Seal. 100	<input type="checkbox"/> Near Cement				
BLACK & RED ROCK		390	421	31	Placement Method: <input checked="" type="checkbox"/> Pumped	<input checked="" type="checkbox"/> Cement Grout				
FRACTURED ROCK & CLAY		421	426	5	<input type="checkbox"/> Poured	<input checked="" type="checkbox"/> Concrete Grout				
RED SAND, CLAY & ROCK		426	580	154	10. DRILLER'S CERTIFICATION					
ROCK TRACE CLAY		580	605	25	This well was drilled under my supervision and the report is true to the best of my knowledge.					
CLAY & ROCK		605	700	95	Name. SARGENT IRRIGATION COMPANY					
					Contractor					
					Address. 9955 N. VIRGINIA ST.					
					Contractor					
					RENO, NV 89506					
					Nevada contractor's license number issued by the State Contractor's Board 21246					
					Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1593					
					Signed. By driller performing actual drilling on site or contractor					
					Date.....					

USE ADDITIONAL SHEETS IF NECESSARY

PROJECT St. James's Village

LOCATION Sub-Gerard Nadia Cr. f. Toy Lake Rd.

PERSONNEL D-2-B



## CONSTRUCTION SUMMARY FOR WA Nadia Court

LOCATION OR COORDS: SW 1/4 SE 1/4 Sec. 10

T-17 N, R-19 E.

ELEVATION: GROUND LEVEL 5880 ft +/-

TOP OF CASING

### DRILLING SUMMARY:

TOTAL DEPTH Rockhole, 701'; Well, 622'

BOREHOLE DIAMETER 12 1/4" 0-622'

12 1/4" 622-701'

DRILLER Sargent Drilling

Reno, NV

RIG SS 4D Speedster

BIT(S) 12 1/4" Tri-Cone (P.102)

12 1/4" Bottom Mount Reamer

DRILLING FLUID Fresh-Gel w/ Dose Pug

SURFACE CASING None

### WELL DESIGN:

BASIS: GEOLOGIC LOG X GEOPHYSICAL LOG X

CASING STRING(S): C=CASING S=SCREEN

+2 262 C1

262 382 S1

382 402 C1

402 502 S1

502 522 C1

522 622 S1

CASING: C1 10 3/4" O.D. x 0.2:0"

C2

C3

C4

S1 1/8" FULL FLO LONGBW

S2

S3

S4

CENTRALIZERS 3 round every 100'

starting from bottom (X)

FILTER MATERIAL 1/8" x 1/4" CHEVREULIAN

INSTALLED REVERSE CIRC. 30 YD<sup>3</sup>

CEMENT 8 YD<sup>3</sup>

OTHER Gravel fill pipe to 105'

bentonite grout cutoff 105-100

### CONSTRUCTION TIME LOG:

TASK	START DATE	TIME	FINISH DATE	TIME
<b>DRILLING:</b>				
12 1/4" Pilot	11/18/85	1030	11/18/85	1800
Ream 12 1/4"	11/18/85	0230	11/18/85	1500
<b>GEOPHYS. LOGGING:</b>				
10" (C1/S1)	11/18/85	1515	11/18/85	1630
<b>CASING:</b>				
<b>FILTER PLACEMENT:</b>				
<b>CEMENTING:</b>				
<b>DEVELOPMENT:</b>				
<b>OTHER:</b>				
<b>WELL DEVELOPMENT:</b>				
Air lift residual mud. Add cement to break down Magne F-bar. Air lift fluid removes residual. Soak/Air lift 10' @ 1 time starting from bottom. Final air lift (direct) after seal was poured & cured				
<b>COMMENTS:</b>				
1. Pilot drilled direct to 190' a reverse below 190'. Major loss circ. 265'				
2. Reamed via reverse circ.				
3. W.L. 11/18/85 1980' below T.O.C.				

PROJECT St. James's Village

LOCATION SW corner Nadia Court & Tay Lake Rd.  
LOGGED BY PCB

## LOG OF BOREHOLE

BOREHOLE Nadia Court

PAGE 1 OF 5

LOC. OR COORDS.			DRILLER Sargent Irrig.			START	FINISH
DEPTH	PEN. RATE	CIRC.	AIR LIFT Q(GPM)	MATERIAL	SYM-BOL	DESCRIPTION AND COMMENTS	
		RET. LOSS					
1000							
10	1/100	0.48 ft/min		clayey, silty gravelly sand	.....	Mixture of clay, silt, sand & gravel w/ sand - fine to coarse, gravel-fine	7.5YR 4/6 strong brown
20	1/108			clayey silty sandy gravel	.....	silt & clay & sand & gravel, gravel to 10/50 is surrounded, made up of andesite.	
30	0.83 ft/min			clayey, silty sand & sand & silt	.....	Similar to above w/ balls of silt	
40				sandy, gravelly clayey silt	.....	fines w/ 15-20% & 3/8" gravel @ 15'	
50	1/28	1/177	1/144	clayey, silty gravelly sand	.....	Similar to above w/ fine (3/8") gravel	10YR 5/8 yellowish brown
60	0.2 ft/min			gravelly, sandy clayey silt	.....	fines - 20% @ 25' 1/8" gravel, else similar	
70	1/32	1/177		cobbles - silty sand	.....	orange & tan boulders w/ 5/8" sand	
80	0.52 ft/min			sand & gravel large gravel	.....	similar to above w/ minor fine gravel; sand is v. coarse & smaller	
90	1/442			gravel	.....	Mixture of silt, clay, sand & gravel	10YR 5/8 24"
100				sand	.....	sand - fine to coarse, gravel - fine (3/8")	10K"
110	1.1 ft/min			tuff?	.....	similar to above. Gravel 1/4" - subangular	10YR 5/5 brown
120							
130	1/545	1/600	1/500	sand	.....	similar to above, but w/ more black	
140				gravel	.....	charred gray clots	
150				silt	.....	med sand, subangular "salt & pepper" color	
160						med. to coarse, minor gravel	
170						grainy fine gravel w/ trace of clay/silt	

End 11/6/85

# LOG OF BOREHOLE

BOREHOLE Nadia Court

PAGE 2 OF 5

LOCATION SW corner Nadia Ct. # Tary Lake Rd.  
LOGGED BY

PROJECT St. James's Village

LOC. OR COORDS.			DRILLER <u>Sargent Irrig.</u>			START	FINISH
DEPTH	PEN. RATE	CIRC. RET. LOSS	AIR LIFT Q(GPM)	MATERIAL	SYM- BOL	DESCRIPTION AND COMMENTS	
-160				fine sand and small chips.	+	fine sand (and rock chips?) up to 0.05" max. Maybe 10% gravel. ~ 5% pink - basalt. Significant fractures on chips. glassy matrix of small rock chips (clean faces) with ~ 5% gravel sized chips.	
-170	10' per 30 min			small rock chips (volcanic?)	+		
-180	10' per 20 min			Rock chips - basalt	+	Rock chips - sand to gravel size. ~ 5% pink basalt.	
-190	10' per 20 min 10.5 ft			small rock chips	+	Rock chips - sand to gravel size - 50% pink/brown, significant weathering.	
-200	11' 40 ft			"	+	Rock chips up to 0.1" max. + Drilling air- ~ 50% weathered.	revere.
-210	0.65			small rock chips and gravel	+	Rock chips up to ~ 0.3" Larger "chips" show weathering - gravel?	
-220	12.00 ft			"	+	" All drilling below 160', smooth - no obvious fracturing	
-230	12.20 ft			small rock chips	+	Rock chips ~ 0.1", some weathering	First "serious" fracturing ~ 225'.
-240	0.5			small rock chips - one size	+	Coarse rock chips, all ~ 0.1", weathering	Fracturing continued.
-250	13.10 ft			Rock chips	+	Rock chips, sand size to ~ 0.3" Much weathering / staining.	
-260	0.67 ft			Rock chips	+	" not quite as highly fractured as above.	
-270	13.25 ft				+	Highly fractured. Massive load in circulation at ~ 268' (1425 hrs).	
-280	0.5 ft				+	Mixed up with quick gel 1625 hrs & complete 1650 ft. Rock chips. most ~ 0.05" but up to ~ 20 mm. Dark magmatic lenses. yellowish brown to reddish orange w/ dark reddish brown cinders. groundmass is glassy & slightly vesicular.	
-290	0.35 ft				+	Similar to above, but less vesicular, & less glassy	
300	0.35 ft				+	Similar to above w/ more larger (~ 1") chips color ~ 2-79'. clay portion is dark reddish brown 2.5-12.26	

PROJECT St. James' Village

LOCATION SSW Corner Nada Cr., & Tigr Lake Rd  
LOGGED BY

## LOG OF BOREHOLE

BOREHOLE Nada Cr.

PAGE 3 OF 5

LOC. OR COORDS.		DRILLER Sargent Irrig.			START	FINISH
GROUND ELEV.						DATE 11/6/95
TOTAL DEPTH.		RIG SS40				TIME 1030
BOREHOLE DIAM.		BIT(S) 12 1/2" Tr. Cone				GEOPHYS. LOG YES NO
		FLUID Dril-Gel				HOW LEFT
DEPTH	PEN. RATE	CIRC. RET. LOSS	AIR LIFT Q(GPM)	MATERIAL	SYM-BOL	DESCRIPTION AND COMMENTS
310	0.36 ft/min	0.935	0.900	Andesite flow		rock chips. Similar to above, but w/ noticeable more dk reddish brown chips. Some limonite? Slight, slightly more crystalline ground mass. Olive blk 5YR 2/1 Tough (hard) cuttings @ 308'. Sub-angular coarse gravel less clay below 301'. All chips ~ 0.05". Black - to brownish black 5YR 2/1,
320	0.33 ft/min	1.030		Andesite flow		Chips. Larger than above Sporadic @ 323' ~ 50% dk reddish brown chips below 328' mostly < 0.05", fe
330	0.38 ft/min	1.050	1.120	Andesite flow		rough @ 333' similar to above. Some euhedral plagi. phenocrysts, ~ 10% clay
340	0.36 ft/min	1.140				rough @ 338' + 340' slight incr. in circ loss
350	0.36 ft/min	1.162				big 1033@ 345' add Magnet fiber mostly reddish brown andesite. Chgs mostly < 0.05" some plagi phenocrysts
360	0.26 ft/min	1.248				rough @ 350' black to reddish brown porphyry. Plagioclasts rough @ 358' of Fe-Magn. & Feldspar
370	0.26 ft/min	1.302	1.320	Andesite flow		rough @ 361' similar to above, most chips ~ 0.02" Clay - 364', Olive 5YR 2/1 to olive brown mix w/ andesite reddish brown andesite porphyry. Plagioclase phenocrysts
380	0.22 ft/min	1.344		Andesite flow		rough @ 365' rough @ 370' black to brownish black 5YR 2/1. Add driller ~ 0.05" olive to olive brown clay ~ 10% to mud
390	0.56 ft/min	1.450		Mud flow?		rough @ 380' clay ~ 30%: Andesite very weathered w/ weathering g. mass rough @ 381' to 388' mixture blk clay & andesite chips @ 388' clay - weakened w/ ferrugin.
400	1.593	1.530		Andesite flow		rough @ 389' to mix of red as & dk andesite @ 390' mix of reddish brown & brown black Andesite chips 0.1"-
410	0.29 ft/min	1.604		Mud Flow?		rough @ 390' mix of blk clay & andesite mixing - brown 10YR 5/4, brownish - 60/40. Clay is white ash.
420	0.39 ft/min	1.630	0.25 ft/min	Andesite flow		rough @ 410" Mixture of - clay & volcanics 40/60 volcanic vary from porphyritic to rough @ 416 glossy - mostly brown/black.
430	0.30 ft/min	1.650	0.21 ft/min	Mud flow or ash		similar to above, but more chips. chip size larger, to 1/2"
440	0.30 ft/min	0.947	0.14 ft/min	Andesite		drilling at ~ 15ft net. vs 25ft gross End 4/8 color @ 440" to reddish brown to weathered ash & chips - ash & fine, w/ few ferromags. mixed w/ brown & grey rock frags. 100% dk yellowish brown chips below chips 100 to 0.7" @ 443 more ash @ 445 chips to 1"

# LOG OF BOREHOLE

BOREHOLE Nadig Court

PAGE 4 OF 5

LOCATION SW cor. Nadig Court & Teq. Lakes Rd.  
LOGGED BY DFB

PROJECT St. James's Village

LOC. OR COORDS.	DRILLER	START	FINISH			
GROUND ELEV.	Sargent Irrig.	DATE 21/6/95				
TOTAL DEPTH.	RIG SS40	TIME 10:30				
BOREHOLE DIAM. 12 1/4"	BIT(S) Tri-cone	GEOPHYS. LOG YES	NO			
	FLUID Drak-Gel	HOW LEFT				
DEPTH	PEN. RATE RET. LOSS	CIRC. Q(GPM)	AIR LIFT	MATERIAL	SYMBOL	DESCRIPTION AND COMMENTS
0.36 ft 1092	0.56 ft 1152	0.4 ft 0.4	—	Andesite flow	—	rough 45° ch., s > est. Chops 70%. Andesite. Dark yellow-green
460	0.48 ft 1196	—	—	—	—	chips > est. Similar to above. Most chips < 0.05" texture is "angry"
470	0.5 ft 1187	—	—	Ash or Andesite	—	Similar to above, but w/ more est (~40%) chips ~ 0.1"
480	0.48 ft 1144	—	—	—	—	"balls" of volcanic ash. dark greyish brown chips ~ 20%
490	0.48 ft 1228	—	—	Andesite - flow	—	Stones below 480'. None, larger chips. Transition to andesite chips > est. Chops to 1" incl. in est. at 495" chips < 1". Few frags & fragments of volcanic ash
500	0.48 ft 1204	—	—	—	—	rough 45° ch. to volcanic ash 2.5YR 3/6
510	0.48 ft 1325	—	—	Andesite flow	—	chips > est. dark greyish brown chips 0.6" 0 ~ 0.7"
520	0.35 ft 1412	—	—	Andesite	—	volcanic ash reddish brown ~ to greenish grey ~ 0.25" alternating, grey reddish brown smooth drilling more chips > 0.5"
530	0.39 ft 1446	—	—	Ash	—	—
540	0.38 ft 1522	—	—	Mix flow	—	@ 530' vesicular andesite porphyry chips. 1/2" walled up hole ash > chips Similar, w/ est. to 1"
550	0.33 ft 1543	—	—	—	—	thin tephra
558	0.35 ft 1600	—	—	—	—	—
560	0.26 ft 1644	—	—	—	—	Similar to above but deeper and 0.5"
570	0.26 ft 1712	—	—	—	—	color change to reddish @ 578' darker clay @ 575' mostly chips. 0.02" red brown to dark grey-brown andesite chips most in chip size
580	0.26 ft 1754	—	—	—	—	rough @ 580' chips of andesite to 0.5" increased in clay/rust rust 0.5"
590	0.26 ft 1819	—	—	—	—	rough @ 590'
600	—	—	—	—	—	—

# LOG OF BOREHOLE

BOREHOLE Nadia Court

PAGE 5 OF 5

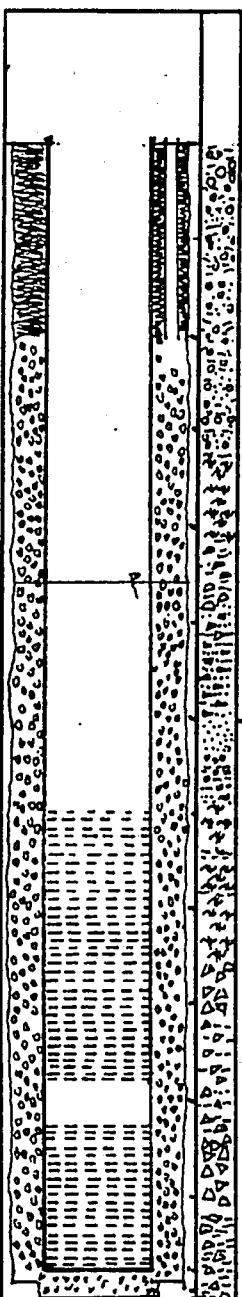
LOC. OR COORDS.			DRILLER <u>Sargent Irrig</u>			START	FINISH
GROUND ELEV.						DATE <u>11/6/01</u>	
TOTAL DEPTH			RIG <u>SS40</u>			TIME <u>1050</u>	
BOREHOLE DIAM. <u>12 1/4"</u>			BIT(S) <u>12 1/4" Tr-Cone</u>			GEOPHYS. LOG <u>YES</u>	<u>NO</u>
FLUID <u>Drill-Gel</u>			HOW LEFT				
DEPTH	PEN. RATE	CIRC. RET. LOSS	AIR LIFT Q(GPM)	MATERIAL	SYM- BOL	DESCRIPTION AND COMMENTS	
610				Andesite		Mixture of andesite ch. ps + clay Chips 80%, clay 20% Chips mostly 10-15" w/ few to 1/2" (Fluid P Start) andesite - brownish tan w/ few vesicles Chips & similar to above in loss clay (10%)	
620	0.758					Change ~62'- drilling smoother more in clay (ash) mixed dk to lt. gray w/ few incld. balls of ash	
630	0.3187 min			Mud flows		at 63' - blackened to v. dark red. Andesite few chips, dispersed w/ clay. mostly clay @ 63' w/ few cuttings because ash is washed out	
640	0.0310 0.46 ft 0.842 0.25 0.29 ft 0.912					Similar to above v. dk. grayish brown 10-12 1/2"	
650	0.937					mix of clay (ash) w/ dk gray 10-12 1/2"	
	0.48 ft					0 cl. ps. 0.01/20 rough 658 boulders ~ 658-664	
660	0.958					Mix of ash & rock frags/chips frags 6 1/2"	
	0.36 ft. 16.2 ft 0.23 ft					smearred w/ ash	
670	0.051					Increasing % of ash. ps below 670' chips 60/40 ps. Andesite is dk gray. some chips rough 670 andesite frags or boulders in mud. frags mostly frags & ash. small% of red-brown ash @ 0.791	
680	0.40					ash & chips. ash is dark brown chips moderate brown to dark yellowish brown	
690	0.29 ft 0.31 ft 12.2 ft 0.16 ft 12.5 ft			Andesite flows		Andesite ch. & minor clay. Dark brown some staining	
700						rough 699 all cl. ps. 0.051	

LOCATION See on Nada Court Log Book Pt. 1  
LOGGED BY Y

PROJECT St. James Village



## PERSONNEL



INSTRUCTION SUMMARY FOR WELL <u>Entry 1133d2w</u>		
LOCATION OR COORDS.: <u>NW4NW4</u>	ELEVATION: GROUND LEVEL <u>5720 ft + 72</u>	
<u>Sec. 14 T.17N, R.19E</u>	TOP OF CASING	
<b>DRILLING SUMMARY:</b>		
TOTAL DEPTH <u>606 ft</u>		
BOREHOLE DIAMETER <u>18", 0-596;</u> <u>12 1/4", 596-606 ft</u>		
DRILLER <u>Sargent Drilling</u>		
RIG <u>SRC 10</u>		
BIT(S) <u>12 1/4" Tri-cone, 13 1/2" Bottom reamer</u>		
DRILLING FLUID <u>Gel</u>		
SURFACE CASING <u>None</u>		
<b>WELL DESIGN:</b>		
BASIS: GEOLOGIC LOG <u>X</u>		
BASIS: GEOPHYSICAL LOG <u>X</u>		
CASING STRING(S) C=CASING S=SCREEN		
<u>+2 - 350 C1</u>		
<u>350 - 490 S1</u>		
<u>490 - 610 C1</u>		
<u>610 - 590 S1</u>		
<u>- - -</u>		
<u>CASING: C1 10 3/4" O.D. x 0.250" I.D. 135</u>		
<u>C2</u>		
<u>C3</u>		
<u>C4</u>		
<u>S1 0.100" FULL-FID LOUVRES</u> <u>10 3/4" O.D. x 0.250"</u>		
<u>S2</u>		
<u>S3</u>		
<u>S4</u>		
CENTRALIZERS <u>14" x 2" x 2'</u> , 3 round <u>80 ft intervals starting from bottom</u>		
FILTER MATERIAL <u>16" x 4" Chevron</u> <u>27 Yds<sup>3</sup></u>		
CEMENT <u>8 sack cement-sand grout</u> <u>6 Yds<sup>3</sup> 101 ft to surface</u>		
OTHER <u>3' of gravel fill goes to</u> <u>105'</u>		
<b>CONSTRUCTION TIME LOG:</b>		
DRILLING:	START DATE	END DATE
<u>12 1/4" P. lot</u>	<u>12/15/90</u>	<u>1400</u>
<u>Ream 18"</u>	<u>12/17/90</u>	<u>2200</u>
GEOPHYS.		
LOGGING:	<u>12/16/90</u>	<u>1100</u>
CASING:	<u>12/16/90</u>	<u>1500</u>
<u>C1 10 3/4" (10")</u>	<u>12/17/90</u>	<u>1020</u>
FILTER PLACEMENT:	<u>12/17/90</u>	<u>2200</u>
CEMENTING	<u>12/18/90</u>	<u>1215</u>
DEVELOPMENT	<u>12/19/90</u>	<u>1215</u>
OTHER:		
<b>WELL DEVELOPMENT:</b>		
<u>All sapp w/ gravel, surf lift residual mud. surge of surf lift add C1 sand</u>		
<u>&amp; surge, Alternating 1.5' surges +</u>		
<u>surf 1.8+ 'til clean</u>		
<b>COMMENTS:</b>		
<u>1. Drill direct to 75', then switched to reverse</u>		

## LOG OF BOREHOLE

BOREHOLE Entry Meadow

PAGE 1 OF 5

LOC. OR COORDS.				DRILLER	Sargent Drilling	START	FINISH
				Reno, NV			
GROUND ELEV.				RIG	SRC 10	DATE	11/30/95
TOTAL DEPTH 606'				BIT(S)	12" N tri-cone	TIME	2015
BOREHOLE DIAM. 12" N P.I. 1.0t				FLUID	Bentonite	GEOPHYS. LOG X YES \ NO	HOW LEFT See constn. log
DEPTH	PEN. RATE ft/min	CIRC. RET. LOSS	AIR LIFT Q(GPM)	MATERIAL	SYM- BOL	DESCRIPTION AND COMMENTS	
						Start out drilling direct	
10				bouldery silty sand & gravel		Mixture of clay, silt & sand - some chips Clay - yellowish brown 10% 1/4", ~5% Silt - 5% - 10% Sand - coarse mixed dk volcanics & brown gravities Dust - ~1/4", boulders were ~3"	OK'd 11/30 Start 12/1
15	0.983	0.39				Mixture of chips & sand w/ minor silt + chips - mostly dk brown gravities, w/ ~10% holes Sand - 0.05"	
20	0.948						
30							
40							
50				sandy gravel w/minor silty clay		Mixture of chips, gravel, sand, silt & clay Chips - 4", mixed volcanics & gravities Gravel - 0.2" + Sand - fine to v. coarse Clay - 10% 1/4", yellowish brown, plastic, ~15% fine Mixture of sand, gravel, silty clay, plastic Gravel (40%) 0.2-2.3" sub-round-subangular Sand - (40%) med-coarse Silty clay - yellowish brown - stiff to hard	
60						Similar to above, except clay is soft	
70				clayey silty sand		Mixture of chips, sand & clayey silt. Chips - 5%" Sand - 0.2" mostly granitic (85%) Clayey silt - yellowish brown (15%)	
80				sandy gravel		Mixture of sand & gravel Sand - 50% med. to coarse, micaceous Gravel - 1" mixes, mostly volcanics @ 9%, sand is granitic	
90				gravelly sand w/ minor silty clay		Mixture of chips, gravel & sand w/ some silty clay Chips - 1" mixes, dk volcanics, cobbles or boulders Gravel - 0.2" plus, multicolored volcs Sand - med. to v. coarse, granitic (80%) Silty clay - 5% below 8ft	
100				silty, sandy gravel		Gravel - 60% - Multicolored volcanics up to 1" Sand - 35% - granitic, med. to v. coarse Silty clay - 5% - brown to dk yellow brown	
110				clayey, sandy gravel		Gravel - 40% multicolored volcanics up to 1", chips > 1" Sand - 40% median to v. coarse, volc & granitic Clay - 20% brown - 1/4" to 1/2", stiff	
120						Similar to above, w/ cobbles or boulders @ 11ft	
130							
140							
150	1015						

# LOG OF BOREHOLE

BOREHOLE Entry Meadow

PAGE 2 OF 2

LOCATION NW Corner of Toy Lake Rd & St. James's Hwy  
PROJECT St. James's Village

LOC. OR COORDS.			DRILLER <u>Sargent Drilling</u>		START	FINISH
					DATE <u>11/30/85</u>	
			RIG		TIME	
GROUND ELEV.			BIT(S) <u>12 1/4" Tri-cone</u>		GEOPHYS. LOG	YES <u>NO</u>
TOTAL DEPTH			FLUID		HOW LEFT	
BOREHOLE DIAM. <u>12 1/4"</u>						
DEPTH	PEN. RATE	CIRC. RET. LOSS	AIR LIFT Q(GPM)	MATERIAL	SYM- BOL	DESCRIPTION AND COMMENTS
150'	10.5			clayey, sandy gravel, cobbles	CB-10	Mixture of chips, gravel, sand + silty clay chips + gravel - 20%. Multi-colored volcanics gravel - 0.2-1", chips to 2" sand - medium tan, tan-orange - 25%
160'	11.0			sandy gravel	CB-10	silty clay - tan, tan-orange, packed on chips + gravel
165'	11.2					Similar to above, but w/ less hard clay to 165' up some dk reddish brown iron py.
170'	11.7			clayey, sandy gravel	CB-10	
	0.39			Andesite flow	AF	Andesite - chips to 1/2" dk reddish brown, "pinkish" dark greenish gray w/ porphyritic - plagiophenocrysts.
180'	11.33					Andesite chips - 1" + smoother. Ophiocratic-porphyritic color ranges from dk. greenish gray to dk reddish brown to moderate brown. SYR 44%, color a + rough surf. amts of 2-6" cinders
	0.31			Andesite flow	AF	
190'	11.03					Andesite chips <1". Mixed colors. Fresh chips are med. gray to olive gray. @ cooling breaks, color as to red brown + brown + clay is
	11.23			Andesite flow	AF	
200'	0.26			Andesite flow	AF	
	14.44					Andesite chips <1", down to 0.05" mix of dk. olive gray, dk gray, + red brown porphyrites, ophiocratic-porphyritic, to ophiocratic
210'	14.45			Andesite flow welded tuft or ash	AF	Mix of Andesite chips + ash ash - dk. ashy yellow to 24". Appears to have been baked stiff
	0.31					
220'	15.21					to clay @ 220' yellowish brown 10% s/s
	0.33					
225'	15.40					
	0.28					
230'	16.08					@ 229' dark gray to black, ophiocratic volcanic chips to 1", let mostly smaller
	0.16					
240'	17.05			Mud flow	MF	@ 233 clay med. stiff, yellowish brown 10% s/s
	0.27					
250'	17.52			Andesite flow	AF	Mixture of dk gray volcanics + yellowish brown clay. a to flow @ 243' chips to 1/4"
	0.22					
255'	18.07			Mud flow	MF	Andesite chips - 0.2" max clay ~ 5%
	0.14					
260'	18.25					
	0.59					
270'	18.42			Sandy gravel welded tuft	SG	0.02m to @ 265', lt gray welded tuft?
	0.55					
280'	18.62					
	0.845					
290'						
300'						

Chips of volcanic rocks, 1/2" max.  
Multi-colored: dk gray, light gray, tan.  
chips of fresh around the grains

Chips of volcanic rock similar to above  
most (80%) ~ 0.05". Cinders or clay  
succeeded on the larger chips

End 12/2  
Start 12/4

## PROJECT St. James's Village

LOCATION NW corner of Toy Litter of St. James's Project  
LOGGED BY R. BUEHLER

## LOG OF BOREHOLE

BOREHOLE Entry Meadow

PAGE 3 OF

LOC. OR COORDS.			DRILLER Sargent Drilling			START	FINISH
DEPTH	PEN. ft/min	CIRC. RET. LOSS	AIR LIFT Q(GPM)	MATERIAL	SYM- BOL	DESCRIPTION AND COMMENTS	
GROUND ELEV.							
TOTAL DEPTH							
BOREHOLE DIAM. 12 1/4"							
310	1024 1032	0.54		sand		chips - 10% volcanic rx. + sand sand - 90% multi colored. welded tuff & sand - 90%	
320	1102 0.58	0.13				sand. med grained. (0.05") to fine multi colored volcanics - gray to reddish brown, lt. brown dusts relatively smooth occasional gravel (~5%)	
330	0.16 1123	0.26		Clayey Sand & gravel		Mixture of volcanic sand + gravel (inc. in gravel ~35% gravel + chips - 35" minus sand - med. to med. coarse clay or silt - lt. brown to reddish brown, trace shale shells, 30% below 335'	
340	1141 3412	1142		clay & gravel		at 334' mostly yellow brown to lt. brown lt. brown clay (strong brown 3512 u/u) mod. stiff - clay is stiff, gravel is embedded in the clay - clay is in stiff, gravel chips up to 1/4", sub rounded.	
350	1204 0.62	1.42		welded tuff		at 347' grey "pebbly" textured volcanic, fusible, weakly welded	
360	1222 0.27	0.5		Andesite flow		at 352' Andesite chips, up to 1/4" color varies from dk gray to dark red 10R 5/6 chips below 352' are ~0.1" & smaller black, aphoritic w/ few amphibole or pyroxene phenocrysts larger chips @ 368' few biotite & plagioclase phenocrysts	
370	1239 1322	0.19 0.63		Andesite flow		at 368' olive gray volcanic, chips to 1/4" aphoritic-porphritic, w/ phenocrysts of feldspar biotite & hornblende. Brown coating on fracture surfaces	
380	1340 0.42	1340		Sandy clay ash		Mixture of sand & sand sand - black, med to coarse, black to brown ash - black, med to coarse, black to brown 30% sand by 380'. Black reddish brown volcanic sand ash - 0.02-0.1", larger @ 381'	
390	1409 0.23	1431		Andesite flow		Mixed volcanic, black to reddish brown Chips - 0.02-0.1", larger @ 381' clay present @ 386'	
400	1450 0.84	1450		ash bed		brown sand clay & to soft 1". brown clay 395-396 and 12/4	
410	1484 0.17	1484		Massive fluid 100%		large fluid loss @ 388'. Dumped 1/2 pit w/o regaining volcanic, vesicular, blocky red   circ. inclined angle Aphoritic feldspatic	
420	1490 0.21	1490		small fluid 100%		at 405' volcanic clots are coated w/ white clay clay - dk gray, greenish brown 2-3/4-5/6 chips - ~0.1", gravel to 1/4", mostly chips 1/4" lt. brown silt, interflows some	
430	1494 0.23	1494		Andesite flow		at 409' Andesite - dark gray to black w/ 5% red brown some is porphyritic w/ plagioclase & pyroxene plagioclase crystals, small vesicles @ n 418'	
440	1504 0.39	1504		Andesite breccia		at 420' yellow brown clay @ 420' Mixture of dark gray of moderate reddish brown volcanic phenocrysts - blocky reddish brown volcanic, which is more to 1/4" fusible than the gray vol. the gray volcanic contains plagioclase & dispersed phenocrysts	
450	1514 0.43	1514		interflow		chips of volcanic rx. 1" minus, 50% oil no. 0.55 colors vary from brownish black (70%) to reddish brown & yellow phenocrysts in the brownish black chips are mostly plagioclase Wheatless	
	1528 0.56	1528		Andesite breccia		increased red-brown vol. @ 1516, possibly marks a boundary	
	1542 0.59	1542					
	1554 0.65	1554					
	1574	1574					

PROJECT St. James's Village  
LOCATION NE CornJoy Rd & St. James's Picay  
LOGGED BY D. Bragin

# LOG OF BOREHOLE

BOREHOLE Entry Meadow

PAGE 4 OF

LOC. OR COORDS.			DRILLER Sargent Drilling			START	FINISH
DEPTH	PEN. RATE	CIRC.	AIR LIFT Q(GPM)	MATERIAL	SYM-BOL	DATE	TIME
		RET. LOSS				GEOPHYS. LOG YES	NO
						HOW LEFT	
400	0.38 1163 1456	700		Andesite breccia	□○○	Mixture of volcanic chips + coarse gravel w/minor silt grains - 6" minus silt - brown, starting @ 45'	
400	0.68 1308	700		Mud flows	○○○	245', gravel chips are 2" minus	
470	0.46 1319	700			○○○	Mixture of chips, sand, & silt chips & sand - dark grey to red-brown andesite silt - 5% - soft, v. dark brown	
480	0.36 1233 0.39 1240	700			○○○	Mixture of chips, sand, gravel & silt - all volcanic w/ brownish tinge, red-brown silt - 5% - soft v. dark brown silt may be higher because could be washing out	
490	0.47 1405 1418	700			○○○	Similar to above, but increased silt	
500	0.55 1429 0.63 1432	700			○○○	Multicolored sands (85%) mixed w/ small gravel (5%) brown 2-4" (10%)	
500	0.62	700			○○○	min. silt 3498' ~10%	
510	0.5 1453 0.5 1503 0.53	700			○○○	4505', silt min. to 40%, color v. to reddish brown	
520	0.25 1532 0.21 1532	700		Andesite Breccia	○○○	Mixture of volcanic sand + silty clay sand - med. to coarse (50%) clay - brown, soft (50%)	
530	0.21 1606	700			○○○	to gray lithic volcanic & stony chips to 1/2" red-brown 2-6"	
540	0.30 1611 0.23 1708	700			○○○	mixed w/ brown silty clay - 525'	
550	0.36 1717 1722 0.42 1740 0.42 1752	700		Andesite breccia	○○○	gray to black volcanic chips to yellow admixtures pyritic small vesicles @ 588'	
560	0.31 1808 0.42 1810	700			○○○	a 575' clay is interbedded on large chips Mix of gravel, chips, sand, w/ minor clay sand - brown to reddish brown, mostly o. or s. rounded	
570	0.42 1832 0.42 1832	700		Mud flows	○○○	Mix of fine gravel, chips, sand, & clay	Add 7m
570	0.21 1955	700			○○○	sand - 0.05" 85% gravel - 5mm - 15% clay - 5% clay - 5%	
580	0.40 1956 0.31 1956	700			○○○	Mix of gravel, sand, & clay gravel - 1/2" minus, 50% sand - 0.05" - 0.10" 40% clay - 5% red-brown clay interbedded the above	
580	0.40 1956 0.31 1956	700		Mud Flows	○○○	clay & chips/sand color v. to lt. yellow brown mixed w/ gravel @ 573' gravel/chips - 1/2" minus	
590	0.17 2002	700			○○○	below 575', clay is ~50-70% of total 580' clay w/ color, to reddish brown, soft chips & clay @ 580' Mix of gravel, sand & reddish brown clay gravel = 1" minus lt. reddish brown clay & sand clay > sand/gravel	
600							

**APPENDIX B**  
**BOREHOLE GEOPHYSICAL LOGS**

**APPENDIX C**  
**FIELD DATA SHEETS AND DATA PLOTS**

## AQUIFER TEST DATA

Owner St James's Village Address \_\_\_\_\_ County \_\_\_\_\_ State CA

Date 1/4/95 Company performing test SAREENT DRILLING / CES Measured by DG

Well No Nadia Court Distance from pumping well — Type of test Step-Drawdown Test No. 1

Measuring equipment Hermit 1000 C w/ 100 psi TD x 4 3/8" x 6 1/4" orifice

## Time Data

## Water Level Data

## Discharge Data

Pump on: Date 1/5/96 Time 0830 (t)  
Pump off: Date \_\_\_\_\_ Time \_\_\_\_\_ (t')

How Q measured Orifice  
Depth of pump air line 325'  
Previous pumping? Yes  No   
Duration \_\_\_\_\_ End 1/5

Duration of aquifer test.  
Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	1	r	1/r	Water level measurement	Correction or conversion	Water level	Water level change s or s'	Discharge measurement	Rate	GM	
													GM	Rate
1/4	0830	0										0		
		1					238.43		41.48			200		STEP I
		2					229.93		31.98			200		Initial Q = 500
		3					228.76		31.81			200		flow fluctuates some due to valve stop
		4					229.58		31.64			200		Send tester is frozen
		5					229.80		31.85			200		clear discharge
		6					230.15		32.20			200		270 psi back pressure
		8					230.43		33.51			200		
		10					231.77		35.02			"		
		12					232.47		35.52			"		
		14					233.00		36.05			"		
		16					232.75		35.80			"		
		18					233.00		36.05			"		
		20					233.31		36.56			"		
		24					233.88		36.93			"		
		28					233.75		36.80			"		
		32					234.07		37.12			"		
		36					234.26		37.31			"		
		40					234.73		37.78			"		
		50					234.82		37.87			"		
		60					235.97		38.12			"		END STEP I $C_s = 5.25 \text{ gpm/ft}$
		61					247.21		50.26			300		STEP II
		62					250.13		53.18			"		
		63					257.29		54.34			"		
		64					252.07		55.12			"		
		65					252.64		55.69			"		
		66					252.89		55.94			"		
		68					253.20		56.25			"		

## AQUIFER TEST DATA

Owner Saint James's Village Address \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

Date 1/4/96 Company performing test SARGENT & CES Measured by DGS

Well No. Nadia Court Distance from pumping well 0 Type of test Step-Drawdown Test No. 1

Measuring equipment Hannit w/ 2 1000 psi. TDX + 4.375" x 6.25" orifice

## Time Data

Pump on: Date 1/4/96 Time 0830 (t)  
Pump off: Date \_\_\_\_\_ Time \_\_\_\_\_ (t')  
Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

## Water Level Data

Static water level 196.95'  
Measuring point Top of 3 till well  
Elevation of measuring point 65.1 + 2.4'

## Discharge Data

How Q measured orifice  
Depth of pump/air line 3.5'  
Previous pumping? Yes X No \_\_\_\_\_  
Duration \_\_\_\_\_ End 1/3/96

Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	1/t'	Water level measurement	Correction or conversion	Water level	Water level change s or s'	Discharge measurement	Rate			
1/4	12/72				254.08			57.13		300			
	14/74				254.52			57.57		"			
	16/76				255.02			58.07		"			
	18/78				255.12			58.17		"			
	20/80				255.16			58.01		"			
	24/84				255.40			58.45		"			
	28/88				255.74			58.79		"			
	32/92				256.15			59.20		"			
	36/96				256.51			59.56		"			
	40/100				256.51			59.56		"			
	50/110				256.91			59.96		"			Zero sum all off Step II
	60/120				257.66			60.71		"			End Step II CS2 = 4.94
	1/121				271.62			74.67		400			Step III 140 psi back pressure
	2/122				276.73			79.78		"			
	3/123				278.95			82.0		"			
	4/124				280.21			83.26		"			
	5/125				280.99			84.04		"			
	6/126				281.87			84.92		"			
	8/127				282.62			85.67		"			
	10/129				283.38			86.45		"			
	12/132				283.72			86.77					
	14/134				283.66			86.71					
	16/136				284.03			87.08					
	18/137				284.44			87.49					
	20/140				284.79			87.84					
	24/141				285.26			88.31					
	28/142				286.13			89.18					
	32/143				286.17			89.22					

## AQUIFER TEST DATA

Owner St. James's Village Address Los Angeles County Los Angeles State CADate 1/4/75 Company performing test SARGENT & CES Measured by DCRWell No Nada Court Distance from pumping well 0 Type of test Step-Drawdown Test No. 1Measuring equipment Hermit w/ 100 ps. TDX & 4.375" x 6.25" orifice

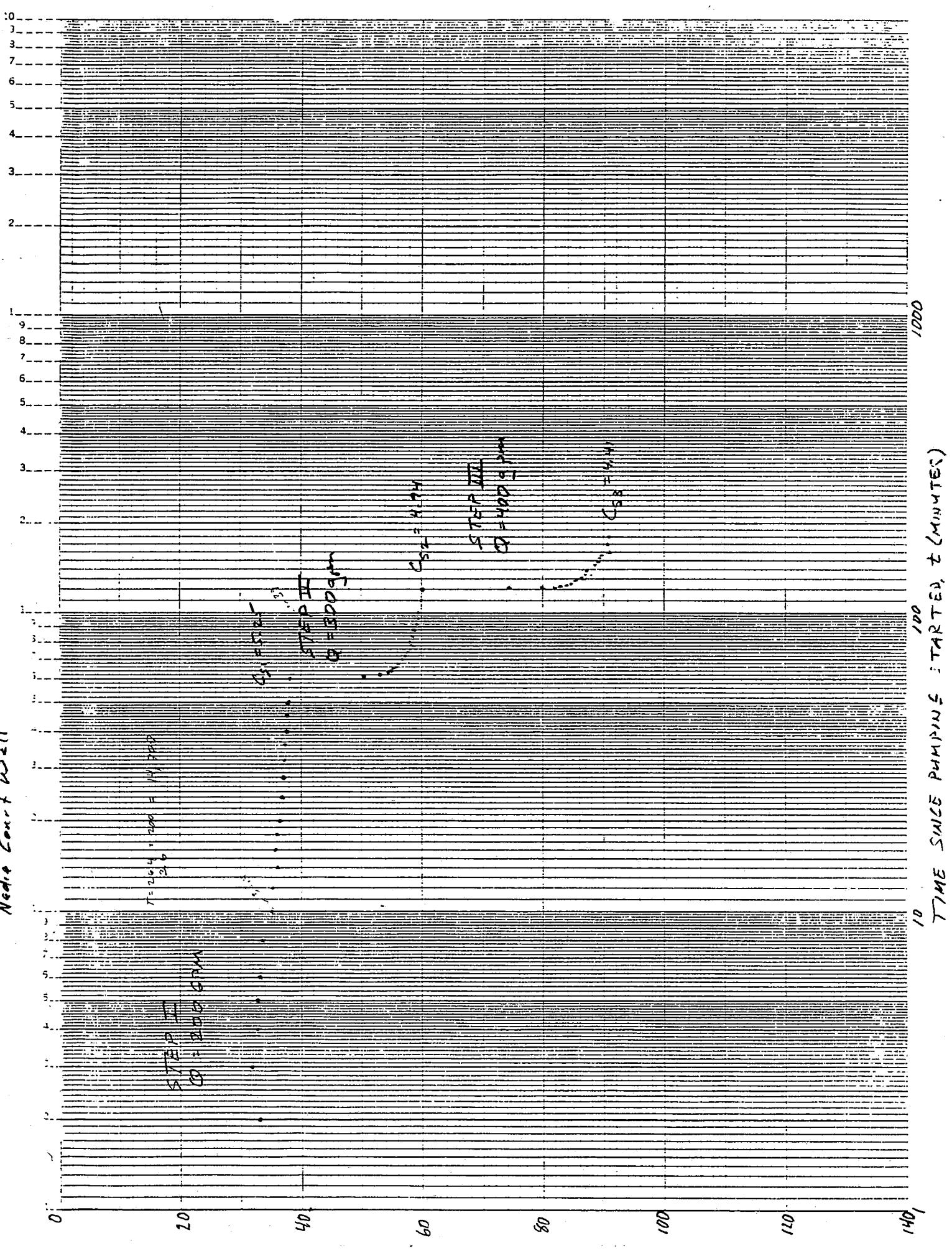
Time Data			Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date <u>1/4/75</u> Time <u>0830</u> (t)			Static water level <u>196.95'</u>				How Q measured <u>orifice</u>			
Pump off: Date <u></u> Time <u></u> (t')			Measuring point <u>Top of Still well</u>				Depth of pump air line <u>535"</u>			
Duration of aquifer test: Pumping _____ Recovery _____			Elevation of measuring point <u>L.S. +24'</u>				Previous pumping? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

Date	Clock time	Time since pump started	Time since pump stopped	Water level measur- ment	Correc- tion or Conver- sion	Water level	Water level change s or s'	Discharge measure- ment	Rate	
		t	t'							
4/96	<del>48</del> <del>160</del>			287.76		90.81			400	
	<del>50</del> <del>170</del>			287.55		90.60			"	
	<del>60</del> <del>180</del>			287.51		90.64			"	
	<del>1</del> <del>181</del>								450	
	<del>2</del> <del>182</del>								400	
	<del>3</del> <del>183</del>									
	<del>4</del> <del>184</del>									
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	<del>57</del> <del>237</del>									
	<del>58</del> <del>238</del>									
	<del>59</del> <del>239</del>									
	<del>60</del> <del>240</del>									

Terminate Test  
Start recoveryEND STEP III  $C_{S3} = 4.41$   
STEP IV  
Pump problem surface  
lagging & the increase  
in Q  
Max 2400

KLEIN INSTRUMENTS INC.  
KLEIN & SONS CO., MADE IN USA  
Model Control Model

1/4/96 12:32 PM  
1/4/96 12:32 PM  
1/4/96 12:32 PM



*Nadia Court*  
AQUIFER TEST DATA

Owner St Jam 117 Villas Address Los Angeles County CA State CA

Date 1/8 - Company performing test CES & Sargent Drilling Measured by DCB & WOZNIAK

Well No. Nadia Court Distance from pumping well \_\_\_\_\_ Type of test Const. ? Test No. \_\_\_\_\_

Measuring equipment Hermil 1070 w/ 127 psi TDH & 4.375" x 6.25" venturi

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data  OB.S. W2113 SJ-4 SJ-3 SJ-2 Petrysak	
Pump on: Date <u>1/8/84</u> Time <u>1430</u> (L)				Static water level <u>197.46</u>				How Q measured <u>7 ft. 6 in.</u>				
Pump off: Date <u>1/8/84</u> Time <u>1030</u> (R)				Measuring point <u>Top of Still well</u>				Depth of pump air line <u>270</u>				
Duration of aquifer test: Pumping <u>14:40 min</u> Recovery <u>1:40 min</u>				Elevation of measuring point <u>LS + 2.2'</u>				Previous pumping? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Duration <u>28 min</u> End <u>1558</u>				

Date	Clock time	Time since pump started	Time since pump stopped	Water level measurement	Correction of conversion	Water level	Water level change s or s'	1 ft (inches)	GPM	Rate	
1/8	1430	0		197.5		41.34		0	0		DCB ↓
	1431	1		238.86		41.34	19.3 1/2	3.50			traces of sand clear ?
	1432	2		246.13		48.63		"			0.1 m/s sand
	1433	3		248.92		57.47		"			0.27 m/s sand
	1434	4		251.42		53.92		"			0.30 m/s sand
	1435	5		252.68		55.18		"			0.31 m/s sand
	1436	6		253.72		57.22		"			0.32 m/s sand
	1437	7		254.44		56.94		"			
	1438	8		255.14		57.64		"			
	1439	9		255.61		58.11		"			0.035 m/s sand
	1440	10		256.21		58.71		"			
	1442	12		257.06		59.56		"			0.40 m/s sand
	1444	14		257.83		60.33		"			
	1446	16		258.48		60.98		"			
	1448	18		258.92		61.42		"			0.40 m/s sand
	1450	20		259.42		61.92					
	1454	24		260.18		62.68					
	1458	28		260.77		63.27					
	1502	32		261.37		63.87					
	1506	33		261.91		64.41					
	1510	40		262.13		64.63					
	1520	50		263.04		65.54					
	1530	60		263.61		66.11					
	1540	70		265.15		67.62					
	1550	73		265.72		68.22					
	1600	70		266.15		68.75	19.1/2	352			Rain storm 10 min later
	1610	100		266.50		69.0					
	1630	120		267.82		69.82					
	1700	150		268.05		70.55					

$$T = 58.4^\circ F \quad EC = 26.7 \text{ March 1984}$$

Nadia Court  
AQUIFER TEST DATA

Page 2 of 1

Owner St. James's Village Address 122 Angeles County CA State CA

Date 1/8 Company performing test CES / Sargent, Drilling Measured by DCB & WCD

Well No. Nadia Court Distance from pumping well — Type of test Constant discharge Test No. 1

Measuring equipment Hermit 1000C w/ 100 psi TDx& 4.375" x 6.25" orifice

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data		
Pump on: Date <u>1/8/96</u> Time <u>1450</u> (t <sub>0</sub> )	Static water level <u>197.50'</u>				How Q measured <u>orifice</u>								
Pump off: Date <u>1/8/96</u> Time <u>1030</u> (t <sub>f</sub> )	Measuring point <u>Top of stilling cup</u>				Depth of pump/air line <u>39.5'</u>								
Duration of aquifer test: Pumping <u>14 min</u> Recovery <u>—</u>	Elevation of measuring point <u>6.5 + 2.2'</u>				Previous pumping? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Duration <u>28 min</u> End <u>135.8 hrs</u>							

Date	Clock time	Time since pump started	Time since pump stopped	Water level measurement	Correction or conversion	Water level	Water level change (s or s')	H (inches)	Q (gpm)	Rate	
1/8	1730	180		262.61		71.11		19 1/2	352		OBS well: SJ-4 SJ-3 SJ-2 Patrys zone
	1800	210		269.12		71.62		19 1/2	352		
	1830	240		269.72		72.22		19 1/2	352		
	1900	270		270.06		72.56		19 1/2	352		
	1930	300		270.28		72.78		19 1/2	352		T = 56.1°F E.C. = 2.1 M.V. = 1.00
	2000	330		270.44		72.94		19.5/16	352		
	2030	360		270.66		73.16		19 5/16	352		
	2130	420		271.27		73.79		"	"		M.J.W. ↓
	2230	480		271.70		74.20		19 1/2	352		
	2330	540		272.24		74.74					
1/9	0030	600		272.49		74.99					
	0130	660		272.90		75.40					
	0230	720		273.21		75.71		19 1/2	352		
	0330	780		273.59		76.09					
	0430	840		273.78		76.28					
	0530	900		274.00		76.50					
	0530	950		274.41		76.91					
	0730	1020		274.75		77.25		19 5/16	350		E.E. ↓
	0830	1030		274.97		77.47		19 5/16 - 1/2"	351		Q↑ @ 0900
	0930	1110		275.79		78.29					
	1030	1200		275.64		78.14		19 5/16	350		Q↓ @ 1000
	1130	1320		276.01		78.51					*
	1430	1440		276.53		79.08		"	"		DCB T = 56.1°F, E.C. = 2.1 M.V. = 1.00 ↓
	1630	1560		276.83		79.33		"	"		
	1820	1680		277.27		79.77		"	"		Spring - 134.4 - 1800
	2030	1800		277.62		80.12		"	"		
	2230	1910		278.03		80.52		"	"		RV
1/10	0030	2040		278.37		80.87		"	"		
	0230	2160		278.63		81.13		"	"		

NADIA COURT  
AQUIFER TEST DATA

Page 2 of \_\_\_\_\_

Owner St. Tammany Village Address Los Angeles, CA County Los Angeles State CA

Date 1/8 - 196 Company performing test CES & Son, Inc. Measured by D. E. W. M. D.

Well No. NADIA 62125 Distance from pumping well — Type of test Constant Discharge Test No. —

Measuring equipment Hermit 1722C w/ 102 psi TDX + 4.375" x 6.25" orifice

**Time Data**

Pump on: Date 1/8/65 Time 1420 (L)  
Pump off: Date 1/8/65 Time 1030 (R)  
Duration of aquifer test:  
Pumping 14,100 cu ft. Recovery —

**Water Level Data**

Static water level 197.50'  
Measuring point Trip 2' full well  
Elevation of measuring point 1.5. + 3.2'

**Discharge Data**

How Q measured 21.1 L/s  
Depth of pump/tair line 2.75'  
Previous pumping? Yes x No —  
Duration 28 minutes End 1313

Comments on factors affecting test data

OBS. WELL  
SJ-4  
SJ-3  
SJ-2  
Petrysek

Date	Clock time	Time since pump started	Time since pump stopped	Water level measurement	Correction or Conversion	Water level	Water level change (in ft)	Discharge measurement	Rate	
		t	t'							
1/10	0430	2280		278.97		81.47				RV
	0630	2400		279.22		81.72				
	0830	2520		279.32		81.82				
	1030	2640		279.66		82.16				
	1230	2760		280.11		82.61				
	1430	2880		280.17		82.67	19 1/4"	348		DCB $T=56.8^{\circ}\text{F}$ $EL=220.4 \text{ m.s.w.m.}$
	1630	3000		280.48		82.78	"	"		generator on @ 170° F
	1830	3120		280.74		83.24	"			
	2030	3240		280.92		83.42	"			EE
	2230	3360		281.14		83.64	"			
1/11	0030	3480		281.33		83.83	"			
	0230	3600		281.68		84.18	"			
	0530	2780		281.90		84.40				
	0830	3900		282.06		84.56	19 1/4"+			FILLED GEN @ 0800 USED 5 GAL GAS / 15 hours GAS @ 3/8 FULL.
	1130	4140		282.21		84.71	19 1/4+-			
	1430	4220		282.47		84.77	"	348		DCB $T=56.8^{\circ}\text{F}$ $EL=220.4 \text{ m.s.w.m.}$
	1730	4300		282.78		85.28	19 5/16	350		crimping piezometer tube reduced fluctuations & smoothed the reading
	2030	4680		283.03		85.53	19 7/16	350		
	2330	4860		283.19		85.69	"	"		RV
1/12	0230	5040		283.29		85.79	"	"		
	0530	5220		283.57		86.07	"	"		
	0830	5400		283.63		86.13	"	"		EE
	1130	5530		283.76		86.26	"	"		
	1430	5760		284.04		86.54	"	"		DCB $T=56.4^{\circ}\text{F}$ $EL=224 \text{ m.s.w.m.}$
	1730	5940		284.23		86.73	"	"		
	2030	6120		284.54		87.04	"	"		
	2330	6300		284.76		87.26				
1/13	0230	6480		284.83		87.33				
	0630	6720		285.41		87.71				

NADIA COHRT  
AQUIFER TEST DATA

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Owner St James's Village Address \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

Date 1/7 - 1/8 Company performing test S.E. Sargent Drilling Measured by D.C.B. & J.S.W.

Well No. Nadia Cohrt Distance from pumping well \_\_\_\_\_ Type of test Constant discharge Test No. 1

Measuring equipment Hermit 1000C w/ 100 psi TDX & 4.375" x 6.25" orifice

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date <u>1/8/96</u> Time <u>1430</u> (t)	Static water level <u>197.50'</u>	How Q measured <u>orifice</u>									
Pump off: Date <u>1/8/96</u> Time <u>1030</u> (t')	Depth of pump air line <u>395'</u>										
Duration of aquifer test:	Measuring point <u>Top of Still Well</u>										
Pumping <u>1440 min</u> Recovery <u>1030 min</u>	Elevation of measuring point <u>155. + 2.2'</u>										
Date	Clock time	Time since pump started	Time since pump stopped	Water level measurement	Correction or conversion	Water level	Water level change (inches)	H (inches)	Q (gpm)	OBS. WELLS	
1/13	1030	6960		285.52		88.02		19 1/4	350	SJ-4	
	1430	7200		285.61		88.11		19 1/4	348	SJ-3	
	1830	7440		285.68		88.18		19 1/4	348	SJ-2	
	2230	7680		286.50		89.00				Petry's well	
1/14	0230	7920		286.97		89.47				KK	
	0630	8160		287.19		89.69				DCB EC = 274 MMW/SEC T = 51°F	
	1030	8400		287.16		89.66		19 1/4	348	DAN D. (No tape measure)	
	1430	8640		287.44		89.94		19 1/4	348	DCB EC = 274 MMW/SEC T = 51°F	
	1830	8880		287.44		89.94		19 1/4	348	Wind	
	2230	9120		287.88		90.38				WW	
1/15	0230	9360		287.85		90.35				windy	
	0630	9600		287.94		90.44	19 1/4	347.3		windy, rain	
	1030	9840		288.48		90.98	19 1/4	349.6		DAN Increased Q = 19 1/4	
	1430	10080		288.35		90.85	19 1/4	349.6		EC @ 8:45 DCB WINDY, CLOUDY	
	1830	10320		288.70		91.20	19 1/4	349.6		clearings, but wind.	
	2230	10560		288.83		91.33				adj. Q from 19 1/4 to 19 1/2 = 2.00	
1/16	0230	10800		288.70		91.20				Q OK	
	0630	11040		288.36		91.36				Q OK	
	1030	11280		286.91	Bad Measurement due to moisture in the pump cable	89.71	19 5/16			START DRAINING WATER EE Q OK ALMOST AT TOP GRAVEL T=51°F	
	1430	11520			shake out moisture & dry conn. connector					DCB EC > 274 MMW/SEC T=56°F	
	1030	11880		288.83		91.33	19 3/8	351		Partial clearing, intermittent shower rain	
1/17	0230	12240		289.14		91.64	19 1/4	349.6		DAN - clear skies, calm	
	0630	12600		289.83		92.33				EE DCB	
	1030	12960		289.93		92.43	19 1/4	349.6			
	1430	13320		290.27		92.77	19 1/4	349.6			
	1030	13680		290.05						ML	
	0830	14040		290.51		93.09	19 1/4	349.6		DCB	
	1430	14400								Pump tripped circuit breaker @ 1030	

NADIA COURT  
AQUIFER TEST DATAPage 1 of 4Owner St. James's Village Address Los Angeles County State CADate 1/8- Company performing test CEI Measured by DCBWell No. 55-41 Distance from pumping well 83' Type of test Constant-discharge Test No. 1Measuring equipment Hermit 1000C

Time Data					Water Level Data					Discharge Data					Comments on factors affecting test data		
Pump on: Date <u>1/8/96</u> Time <u>1430</u> (t.) Pump off: Date <u>1/18/96</u> Time <u>1030</u> (t')				Static water level <u>194.90'</u> Measuring point <u>T.P.C.</u> Elevation of measuring point _____				How Q measured <u>orifice</u> Depth of pump/air line <u>395'</u> Previous pumping? Yes <u>X</u> No <u>      </u> Duration <u>27 min</u> End <u>1958'</u>									
Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate							
1/8	1430	0			194.90			0							DCB ↓		

1431	1				196.73			1.83							
1432	2				197.42			2.52							
1433	3				197.96			3.06							
1434	4				198.39			3.49							
1435	5				198.77			3.87							
1436	6				199.25			4.15							
1437	7				199.74			4.44							
1438	8				199.56			4.66							
1439	9				199.75			4.85							
1440	10				199.90			5.0							
1442	12				200.22			5.32							
1444	14				200.44			5.54							
1446	16				200.66			5.76							
1448	17				200.81			5.91							
1450	20				201.00			6.10							
1454	24				201.28			6.38							
1458	28				201.47			6.57							
1502	32				201.66			6.76							
1504	34				201.85			6.95							
1507	40				201.98			7.08							
1520	510				202.29			7.39							
1530	60				202.54			7.64							
1540	70				202.79			7.89							
1550	80				203.01			8.11							
1600	70				203.20			8.30							
1610	100				203.36			8.46							
1630	120				203.64			8.74							
1700	150				203.99			9.09							

**NADIA COURT  
AQUIFER TEST DATA**

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Owner St James 11/1996 Address \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

Date 1/8 - 196 Company performing test CEI Measured by DCW & WCCS

Well No. 55-4 Distance from pumping well 83' Type of test Constant-drawdown Test No. \_\_\_\_\_

Measuring equipment Hermit 1032C w/ 100 psi TDX

Time Data					Water Level Data					Discharge Data			Comments on factors affecting test data
Pump on: Date	Pump off: Date	Duration of aquifer test:	Pumping	Recovery	Static water level	Measuring point	Elevation of measuring point	How Q measured	Depth of pump/air line	Previous pumping? Yes	No		
1/8/96	1/8/96	1430 min	14160 min	14160 min	194.90	T.O.C.							

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change (s or s')	Discharge measurement	Rate			
1/8	1730	180			204.17			7.37					
	1850	210			204.52			9.62					
	1830	240			204.74			9.84					
	1900	270			204.96			10.06					
	1930	300			205.15			10.25					
	2000	330			205.31			10.41					
	2030	360			205.43			10.53					
	2130	420			205.71			10.81					MGW
	2230	480			205.93			11.03					
	2330	540			206.12			11.22					
1/9	0030	600			206.34			11.44					
	0130	660			206.50			11.60					
	0230	720			206.66			11.76					
	0330	780			206.81			11.91					
	0430	840			206.94			12.04					
	0530	900			207.06			12.16					
	0630	960			207.19			12.29					
	0730	1020			207.32			12.42					EE
	0830	1080			207.41			12.51					
	0930	1140			207.57			12.67					
	1030	1200			207.69			12.79					
	1230	1320			207.88			12.98					
	1430	1440			208.10			13.20					
	1630	1560			208.32			13.42					
	1830	1630			208.54			13.64					
	2030	1770			208.79			13.89					
	2230	1720			209.01			14.11					RV
1/10	0030	2147			209.20			14.30					
	0230	2100			209.36			14.46					

NADIA COURT  
AQUIFER TEST DATA

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Owner J. Janice's V.11 Address 121 Langley County CA State CA

Date 1/8-19- Company performing test CES & Sargent Drilling Measured by D-B & WCD

Well No. SJ-4 Distance from pumping well 83' Type of test Constant Discharge Test No. 1

Measuring equipment Hermit 1022C w/ 172 psi TDX

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Date	Clock time	Time since pump started	Time since pump stopped	Water level measurement	Correction or conversion	Water level	Water level change (s.drs)	Discharge measurement	Rate		
1/10	0430	2230		209.51			14.61			RV	
	0630	2400		209.67			14.77				
	0830	2520		209.83			14.93			EE	
	1030	2640		209.99			15.09				
	1230	2760		210.08			15.18				
	1430	2830		210.17			15.28			DCB ↓	
	1630	3000		210.30			15.40				
	1830	3120		210.43			15.53				
	2030	3240		210.55			15.65			EE	
	2230	3360		210.68			15.78				
1/11	0030	3480		210.74			15.84				
	0230	3600		210.86			15.96				
	0430	3780		211.02			16.12				
	0630	3960		211.15			16.25				
	1130	4140		211.24			16.34			DAN	
	1430	4320		211.34			16.44			DB	
	1730	4500		211.46			16.56				
	2030	4630		211.59			16.69				
	2230	4860		211.74			16.84			RV	
1/12	0230	5040		211.81			16.91				
	0430	5220		211.90			17.00				
	0630	5400		212.00			17.10			EE	
	1130	5570		212.09			17.19				
	1430	5760		212.18			17.29			DCB	
	1730	5940		212.31			17.41				
	2030	6120		212.44			17.54				
	2230	6300		212.56			17.66				
1/13	0130	6450		212.66			17.76				
	0630	6720		212.78			17.89				

NADIA COURT  
AQUIFER TEST DATA

Owner S. James's Village Address \_\_\_\_\_ Los Angeles County \_\_\_\_\_ State CA

Date 1/8 - 196 Company performing test CES & Sargent Drilling Measured by DCB + WCAB

Well No. SJ-4 Distance from pumping well 83' Type of test Constant Discharge Test No.  

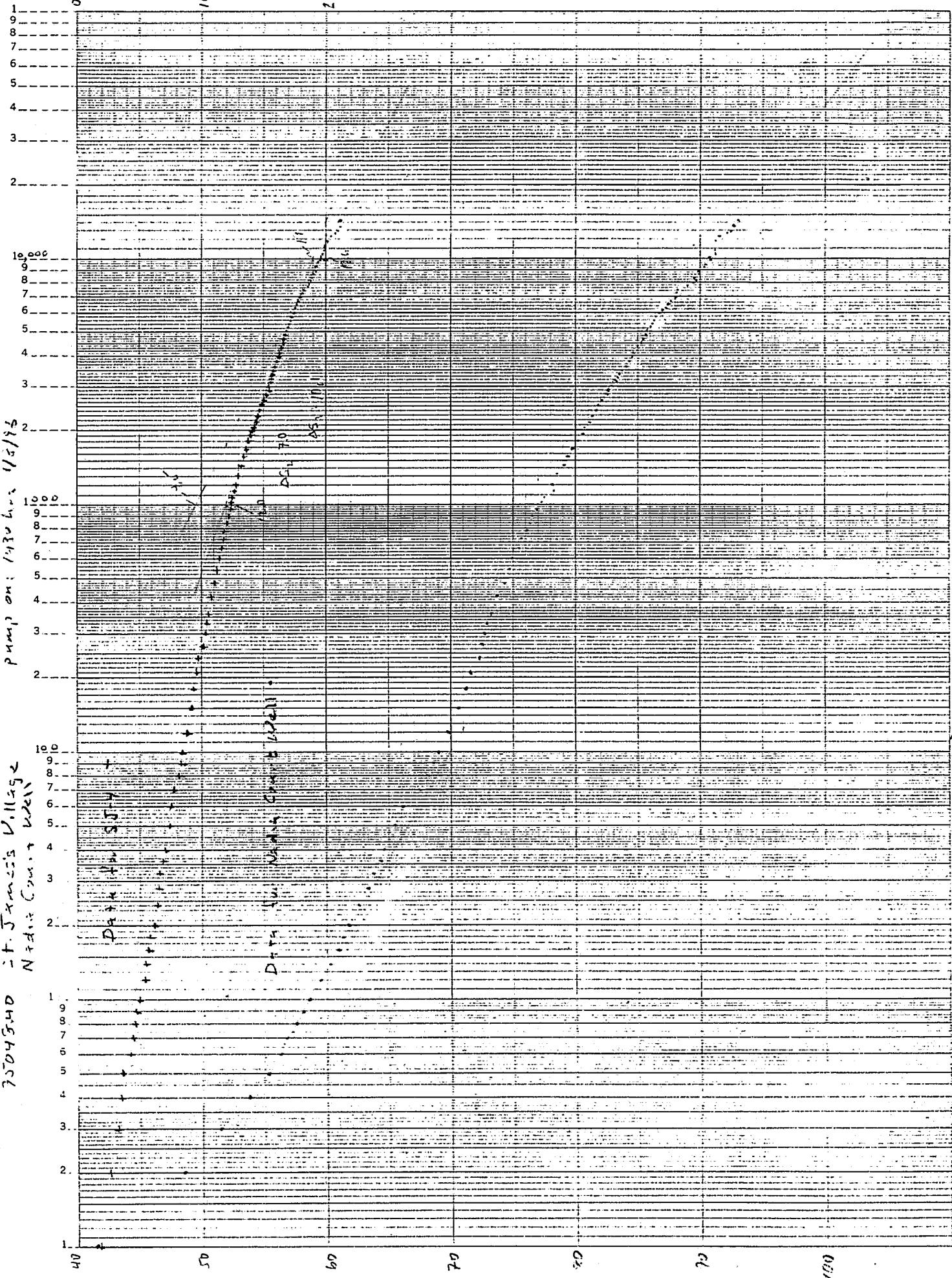
Measuring equipment Hermit 1000C w/ 100 psi TDx

Time Data					Water Level Data					Discharge Data			Comments on factors affecting test data	
Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change (sbrs')	H (inches)	Q (gpm)	Rate			
		t	t'											
<u>1/13</u>	<u>1030</u>	<u>6960</u>			<u>212.97</u>			<u>18.07</u>	<u>19 1/4</u>	<u>350</u>		<u>KK</u>		
	<u>1430</u>	<u>7200</u>			<u>213.03</u>			<u>18.13</u>				<u>DCB</u>		
	<u>1830</u>	<u>7440</u>			<u>213.17</u>			<u>18.27</u>						
	<u>2230</u>	<u>7680</u>			<u>213.38</u>			<u>18.48</u>				<u>EE</u>		
<u>1/14</u>	<u>0230</u>	<u>7920</u>			<u>213.53</u>			<u>18.63</u>						
	<u>0630</u>	<u>8160</u>			<u>213.69</u>			<u>18.79</u>						
	<u>1030</u>	<u>8400</u>			<u>213.79</u>			<u>18.89</u>				<u>DAN</u>		
	<u>1430</u>	<u>8640</u>			<u>213.91</u>			<u>19.01</u>				<u>DCB STS = 100% CASH</u>		
	<u>1830</u>	<u>8880</u>			<u>214.04</u>			<u>19.14</u>						
	<u>2230</u>	<u>9120</u>			<u>214.16</u>			<u>19.26</u>				<u>new</u>		
<u>1/15</u>	<u>0230</u>	<u>9360</u>			<u>214.23</u>			<u>19.33</u>						
	<u>0630</u>	<u>9600</u>			<u>214.32</u>			<u>19.42</u>						
	<u>1030</u>	<u>9840</u>			<u>214.51</u>			<u>19.61</u>				<u>DAN D.</u>		
	<u>1430</u>	<u>10080</u>			<u>214.51</u>			<u>19.61</u>				<u>DCB</u>		
	<u>1830</u>	<u>10320</u>			<u>214.70</u>			<u>19.72</u>						
	<u>2230</u>	<u>10560</u>			<u>214.79</u>			<u>19.89</u>						
<u>1/16</u>	<u>0230</u>	<u>10800</u>			<u>214.82</u>			<u>19.92</u>						
	<u>0630</u>	<u>11040</u>			<u>214.79</u>			<u>19.89</u>						
	<u>1030</u>	<u>11280</u>			<u>214.76</u>			<u>19.86</u>						
	<u>1430</u>	<u>11520</u>												
	<u>2020</u>	<u>11880</u>			<u>215.04</u>			<u>20.04</u>						
<u>1/17</u>	<u>0230</u>	<u>12240</u>			<u>215.36</u>			<u>20.46</u>						
	<u>0630</u>	<u>12600</u>			<u>215.70</u>			<u>20.80</u>				<u>DCB</u>		
	<u>1030</u>	<u>12960</u>			<u>215.86</u>			<u>20.96</u>						
	<u>1430</u>	<u>13320</u>			<u>216.02</u>			<u>21.12</u>						
<u>1/18</u>	<u>0230</u>	<u>13680</u>			<u>216.08</u>							<u>ML</u>		
	<u>0630</u>	<u>14040</u>			<u>216.11</u>			<u>21.21</u>				<u>DCB</u>		
	<u>1030</u>	<u>1440</u>											<u>Pump stopped @ 1030 hrs</u>	

SS-4 DRAWDOWN, : (FEET)

K-E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 6210



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TIME SINCE PUMPING STARTED,  $t$  (MINUTES)

NADIA CURT  
AQUIFER TEST DATA

Page 1 of 1

Owner St James, Inc. Address Los Angeles County CA State CA

Date 1/8- Company performing test S E I & Sargent Drilling Measured by D R f wend

Well No. Petrey's Lake Distance from pumping well \_\_\_\_\_ Type of test \_\_\_\_\_ Test No. \_\_\_\_\_

Measuring equipment Olympic Sounder

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date	1/8/96	Time	1430	(t.)	Static water level	How Q measured	Depth of pump/air line	Previous pumping? Yes	No		Comments on factors affecting test data
Pump off: Date		Time		(t')	Measuring point						
Duration of aquifer test:				Pumping	Recovery	Elevation of measuring point		Duration	End		
Date	Clock time	Time since pump started	Time since pump stopped	t/t'		Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate
1/8	1307	-83				169.15					DCB
	1545	75				169.15					↓
	1730	180				169.16					
	1955	325				169.19					
	2158	448				169.17					
1/9	0005	573				169.25					MCW
	0310	740				169.24					
	0710	1000				169.24					
	1035	1295				169.24					EE
	1435	1445				169.22					DCB
	1730	1620	1660			169.29					
	2120	1850				169.37					
1/10	0110	2080				169.44					RV
	0620	2390				169.49					
	1020	2630				169.57					EE
	1420	2860				169.48					DCB
	1738	3068				169.51					
	2140	3310				169.59					EE
1/11	0127	3537				169.67					
	0610	3820				169.60					
	12:20	4190				169.59					DAN D.
	1512	4362				169.52					DCB
	1815	4545				169.53					
	2300	4830				169.61					RV
1/12	0630	5280				169.56					
	1215	5625				169.55					
	1456	5786				169.50					DCB
	1500	5973				169.54					
	2022	6112				169.59					

## AQUIFER TEST DATA

Owner St. James's Village Address Los Angeles County State CADate 1/8 - 196 Company performing test CES & Sargent Drilling Measured by DEB & WEKAWell No. Petrusak Distance from pumping well \_\_\_\_\_ Type of test Constant Discharge Test No. 1Measuring equipment Olympic Sonde

Time Data				Water Level Data				Discharge Data				Comments on factors affecting test data
Pump on: Date	1/8/96	Time	1430	(t)	Static water level		How Q measured		Depth of pump/air line			
Pump off: Date		Time		(t')	Measuring point		Previous pumping? Yes	Yes	No			
Duration of aquifer test:		Pumping		Recovery	Elevation of measuring point		Duration		End			

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or conversion	Water level	Water level change s or s'	Discharge measurement	Rate	Other obs wells
1/12	2308	6278			169.62						SJ-2, SJ-3, & SJ-4
1/13	0245	6495			169.62						ML
1/13	01050	6740			169.60						↓
1/13	1050	6980			169.68						1/C
	1436	7206			169.58						DCB
	1830	7440			169.60						
	2300	7710			169.69						EE
1/14	0515	8085			169.71						
	1115	8445			169.74						170 - 80 cm (.26 ft)
	1458	8668			169.69						DCB
	1850	8900			169.74						Windy
	2320	9170			169.79						MMI
1/15	0310	9400			169.70						
	0720	9650			169.72						
	1120	9890			169.86						DAN 45 psi on tank
	1500	10110			169.74						DCB 45 psi
	1830	10320			169.79						WINDY, CLOUDY
1/16	0105	10715			169.83						RV
	0720	11090			169.73						CHICKEN RUNS
	1230	11400			169.58						EE
	1448	11538			169.54						DCB
	2020	11870			169.69						DCB SHOWERS AND RAIN
1/17	0150	12200			169.86						55 psi on tank
	0740	12550			169.98						DAN - Colder clear trace snow
	1240	12750			170.03						RV
	1455	12988			170.00						DCB
	2022	13312			170.05						U.L.
1/18	0251	13702			170.12						
	0835	14045			170.02						DCB



NAD'83 COVZT  
AQUIFER TEST DATA

Owner S. James's Village Address Los Angeles County State CA

Date 1/2 - 195 Company performing test CES & Sargent Drilling Measured by DCB & WGHD

Well No. SJ-2 Distance from pumping well 100 ft Type of test Constant Discharge Test No. 1

Measuring equipment Olympic Sounder

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date	1/8/96	Time	(t.)	Static water level				How Q measured			
Pump off: Date		Time	(t')	Measuring point	T.D.C.			Depth of pump/air line			
Duration of aquifer test:				Elevation of measuring point				Previous pumping? Yes	Yes	No	
Pumping		Recovery						Duration		End	
											Other Obs. Wells SJ-3, SJ-4, d Petry stake

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate	
1/12	23:50	6320			674.30	-400'	274.30				ML
1/13	0310	6520			674.26	-400'	274.26				
1/13	0715	6765			674.24	-400'	274.24				↓
1/13	1025	6955			674.23	-400'	274.23				KK
	1420	7190			674.21	-400	274.21				
	1815	7425			674.23	-400	274.23				
	2240	7690			674.25	-400	274.25				EE
1/14	0500	8070			674.22	-400	274.22				
	11:00	8430			675	-400"	274.22				DAN No tape measure
	1436	8446			674.21	-400	274.21				DCB
	1836	8886			674.24	-400	274.24				Windy
	2300	9150			674.18	-400	274.18				MW
1/15	0250	9380			674.11	-400	274.11				
	0710	9640			674.14	-400	274.14				
	11:00	9870			674.18	-400	274.18				DAN
	1440	10090			674.16	-400	274.16				DCB
	1815	10305			674.18	-400	274.18				WINDY, CLOUDY
1/16	0047				674.17	-400	274.17				RV
	0700	11070			674.00	-400	274.00				checkin + wind
	1215	11385			673.80	-400	273.80				ET
	1429	11.11			673.63	-400	273.63				DCB
	2001	11830			673.36	-400	273.36				Snow/rain mix
1/17	0130	12170			673.91	-400	273.91				DAN
	0720	12550			673.95	-400	273.95				
	1205	12815			674.05	-400	274.05				RV
	1430	12960			674.04	-400	274.04				DCB
	2030	13320			674.15	-400	274.18				
1/18	0234	3634			674.07	-400	274.07				ML
	0820	14030			674.02	-400	274.02				DCB

NADIA CO. R.T.  
AQUIFER TEST DATA

Page 1 of 1

Owner SJ-2 Tenant Village Address Los Angeles County State CA

Date 1/8- Company performing test CEC & Sonnen Drilling Measured by D.C.B. & W.C.W.

Well No. SJ-2 Distance from pumping well \_\_\_\_\_ Type of test Constant Discharge Test No. \_\_\_\_\_

Measuring equipment Olympic Sounder

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date <u>1/8/86</u> Time <u>1430</u> (t.)	Pump off: Date _____ Time _____ (t')	Duration of aquifer test:	Pumping _____ Recovery _____	Static water level _____	Measuring point <u>T.O.C.</u>	Elevation of measuring point _____	How Q measured _____	Depth of pump/air line _____	Previous pumping? Yes _____ No _____		
Date	Clock time	Time since pump started	Time since pump stopped	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate		
1/8	1248	-102		674.20	-500	274.20				Other Obs. wells SJ-3, -4 Petrysek	
	1530	60		674.20	-400	274.20					
	1715	165		674.19	-400	274.19					
	1940	310		674.19	-400	274.19					
	2140	430		674.21	-400	274.21					
	2350	560		674.20	-400	274.20				MCW	
1/9	0300	750		674.17	-400	274.17					
	0700	990		674.10	-400	274.10					
	1015	1185		674.13	-400	274.13					
	1415	1425		674.00	-400	274.00				DCB	
	1725	1655		674.19	-400	274.19				↓	
	2108	1838		674.29	-400	274.29					
1/10	0047	2057		674.36	-400	274.36				RV	
	0600	2370		674.37	-400	274.37					
	1000	2610		674.58	-400	274.58				EE	
	1405	2855		674.44	-400	274.38					
	1720	3040		674.86	-400	274.46					
	2115	3285		674.48	-400	274.48					
1/11	0107	3517		674.49	-400	274.49					
	0550	3800		674.49	-400	274.49					
	1145	4155		674.46	-400	274.46				DAN D.	
	1454	4344		674.49	-400	274.49				DCB	
	1733	4528		674.46	-400	274.46					
	2240	4810		674.46	-400	274.46					
1/12	0600	5250		674.37	-400	274.37					
	1200	5610		674.32	-400	274.32				EE	
	1438	5768		674.31	-400	274.31				DCB	
	1735	5941		674.32	-400	274.32					
	2000	6095		674.29	-400	274.27					

## NADIA COURT

Page 3 of 1

## AQUIFER TEST DATA

Owner St. James's VILLAGE Address LOS ANGELES County CA State CA

Date 1/8- Company performing test CES & SARGENT DRILLING Measured by DCB & WEND

Well No. SJ-2 Distance from pumping well 5,800' Type of test Constant-Discharge Test No. 1

Measuring equipment OLYMPIC SOUNDER (WCHD)

## Time Data

Pump on: Date 1/7/76 Time 1450 (t)  
Pump off: Date 1/7/76 Time 1030 (t')

Duration of aquifer test: Pumping 10 days Recovery  

## Water Level Data

Static water level \_\_\_\_\_  
Measuring point Top of Casing  
Elevation of measuring point \_\_\_\_\_

## Discharge Data

How Q measured \_\_\_\_\_  
Depth of pump/air line \_\_\_\_\_  
Previous pumping? Yes \_\_\_\_\_ No \_\_\_\_\_  
Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors affecting test data

Other Obs. wells  
SJ-3, SJ-4 & Petryszek

Date	Clock time	Time since pump started	Time since pump stopped	Water level measure- ment	Correction or Conversion	Water level	Water level ch -ge s or s'	Discharge measure- ment	Rate		
		t	t'								
1/19	1448	15868	1698	674.05	-400'	274.05					
1/20	1122	17091	2932	674.12	-400	274.12					
1/21	1430	18720	4570	673.92	-400	273.92					

Q = 350 gpm for the test

NASA COURT  
AQUIFER TEST DATA

Page 1 of 1

Owner St James Village Address Los Angeles County State CA  
Date 1/8- Company performing test CES + Sorenson Drilling Measured by DCB & WCN  
Well No. SJ-3 Distance from pumping well Type of test Constant Discharge Test No. 1

Measuring equipment Olympic Sounder

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Date	Clock time	Time since pump started	Time since pump stopped	Water level measurement	Correction or conversion	Water level	Water level change s or s'	Discharge measurement	Rate		
		t	t'	t/t'							
1/8	1302			236.25							DCB
	1538	68		236.26							↓
	1725	175		236.27							
	1950	320		236.19							
	2130	440		236.29							
1/9	2400	570		236.17							new
	0307	757		236.32							
	0705	995		236.20							
	1030	1200		236.11							EE
	1430	1440		236.13							DCB
	1600	1640		236.27							
	2119	1849		236.25							
1/10	0056	2066		236.51							RV
	0610	2380		236.58							RV
	1015	2625		236.51							EE
	1415	2865		236.57							DCB
	1730	3060		236.50							↓
	2130	3300		236.53							
11	0120	3530		236.54							
	0600	3810		236.55							
	1200	4170		236.72							checked twice DAN D.
	1530	4357		236.58							DCB
	1810	4540		236.62							
	2340	4870		236.62							RV - changed battery
12	0620	5270		236.56							
	1210	5620		236.57							
	1450	5780		236.55							MEASURED WITH ACTAT SENSITIVITY EE AT MID INSTEAD OF HIGH.
	1755	5765		236.54							
	1714	6108		236.54							

NASCIA COURT  
AQUIFER TEST DATAOwner St. James's Village Address Laguna County Santa Barbara State CADate 1/8-196 Company performing test CES & Sargent Drilling Measured by DCB & WCHDWell No. SJ-3 Distance from pumping well \_\_\_\_\_ Type of test Constant-Discharge Test No. 1Measuring equipment Olympic Sounder

Time Data				Water Level Data				Discharge Data				Comments on factors affecting test data	
Pump on: Date <u>1/8/66</u> Time <u>1430</u> (t.)	Pump off: Date <u></u> Time <u></u> (t')	Duration of aquifer test:	Pumping <u></u> Recovery <u></u>	Static water level	Measuring point <u>T.O.C.</u>	Elevation of measuring point	How Q measured	Depth of pump/air line	Previous pumping? Yes <u></u> No <u></u>	Duration	End		
Date	Clock time	Time since pump started	Time since pump stopped	t	t'	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate	
1/12	0348	6308					236.51						Other Obs. wells SJ-2, SJ-4 & Potentiometer
1/13	0255	6505					236.41						ML
1/13	0100	6750					236.33						↓
1/13	1040	6970					236.58						K/L
	1430	7200					236.57						DCB
	1521	7435					236.58						
	2250	7706					236.41						
1/14	0510	8080					236.61						
	1110	8440					236.66						235 + 50.7 cm (No tups) DD
	1452	8622					236.68						DCB
	1845	8895					236.72						
	2310	9160					236.72						new
1/15	0300	9390					236.63						
	0715	9645					236.66						
	1110	9880					236.60						DD - some trouble w/Sounder
	1455	10105					236.45						DCB WINDY, CLOUDY
1/16	0055	10705					236.64						R/V
	0710	11080					236.34						checked twice
1220	1												UNDER SEVERAL FEET OF WATER - NEED HIP BOOTS!
1435													SJ-11 floating. WOULD add 2" of excavation. Salvage sounder
2015	11865						241.40	-5.0	236.40				
1/17	0140	12180					241.70	-5.0	236.70				DAN
	0730	12540					241.81	-5.0	236.81				
	1230	12840					242.02	-5.0	237.02				R/V
	1445	12775					242.01	-5.0	237.01				JCS sounder reading erratic, pulled & found probe broken
	2015	13308					242.02	-5.0	237.02				Add small amt. CL. still erratic, but better
1/18	0244	13694					242.12	-5.0	237.12				
	0830	14040					242.33	-5.0	237.33				DCB

NADIA COURT  
AQUIFER TEST DATA

Page 3 of

Owner St. James's Village Address Los Angeles County CA State CA

Date 1/8- Company performing test CES & SARGENT DRILLING Measured by DCB & WCHD

Well No. SJ-3 Distance from pumping well 2,175 Type of test Constant-Discharge Test No. 1

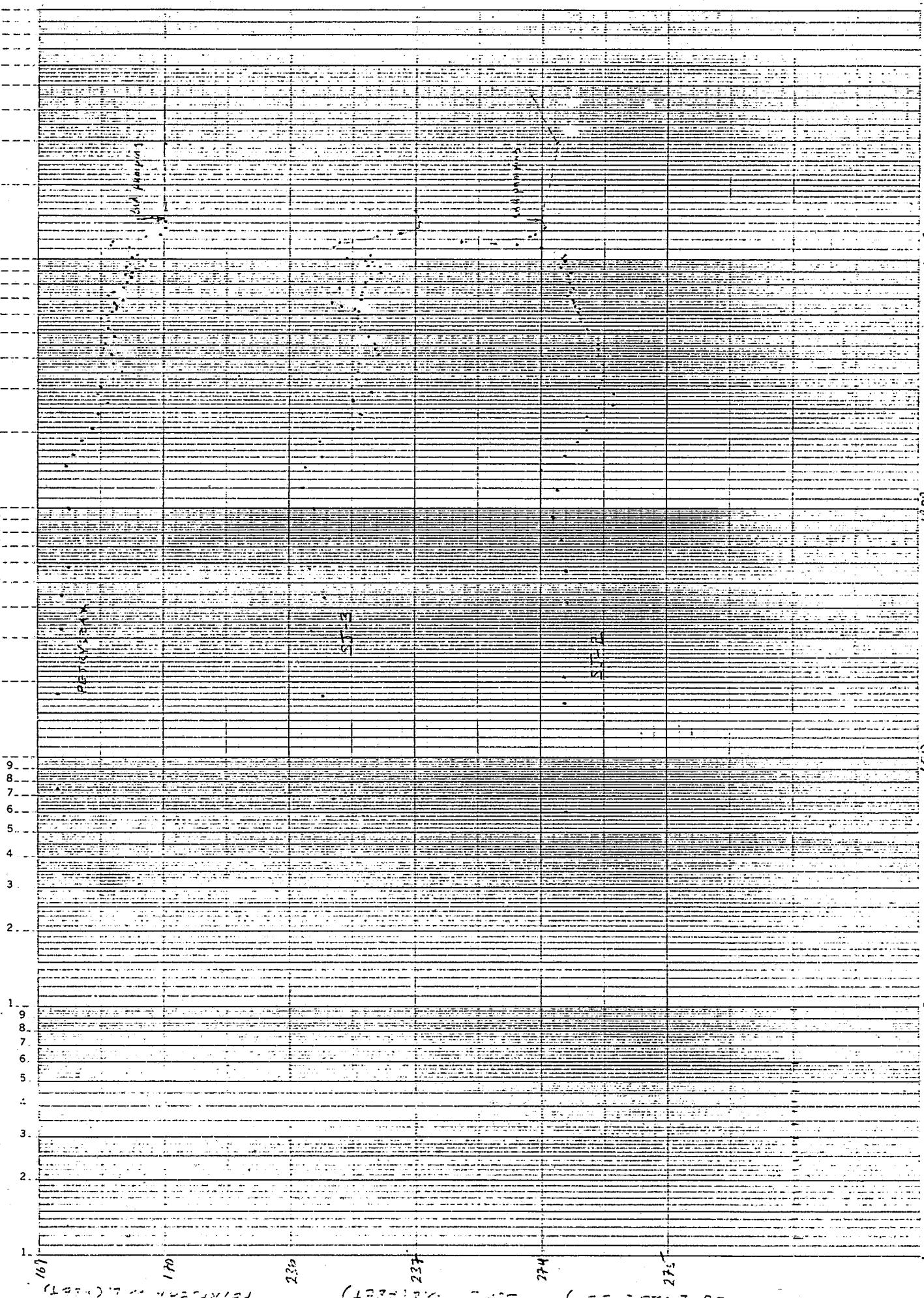
Measuring equipment Olympic Sander (wohl)

K-E SEMI LOGARITHMIC 5 CYCLES X 70 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.

95048.44 St. James Village

Natl. & Const. & Well Constr. & P Tect.

466210  
pump on: 1430 hrs 1/8/96



## AQUIFER TEST DATA

Owner C. James S. 11122 Address 1234 Angeles County LA State CADate 1/27/75 Company performing test CES of Sorenson Drilling Measured by D = BWell No. Entry Measure Distance from pumping well — Type of test Step-Drawdown Test No. 1Measuring equipment Hermit 1700 w/ 127 psi TDX

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date <u>1/27/75</u> Time <u>2729</u> (t.)	Static water level <u>244.59</u>				How Q measured <u>orifice</u>				Comments on factors affecting test data		
Pump off: Date <u> </u> Time <u> </u> (t')	Measuring point <u> </u>				Depth of pump/air line <u>500'</u>						
Duration of aquifer test: Pumping <u> </u> Recovery <u> </u>	Elevation of measuring point <u> </u>				Previous pumping? Yes <u> </u> No <u> </u>	Duration <u> </u> End <u> </u>					

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate	
1/30	7/67				285.50			410.91		300	
	8/68				285.72			41.12			
	9/69				286.10			41.57			
	10/70				286.44			41.85			
	11/71				286.60			42.01			
	12/72				286.88			42.29			
	13/73				287.44			42.85			
	14/74				287.81			43.27			
	15/75				287.99			43.40			
	16/76				288.67			44.09			
	17/77				289.31			44.72			
	18/78				289.82			45.23			
	19/79				290.72			46.33			
	20/80				290.54			45.75			
	21/81				291.96			47.37			
11/00	60/20				292.71			48.18			End Step II Start Step III CSZ = 6.28
	1/121				302.23			57.64	2572	400	
	2/122				303.71			57.12			
	3/123				304.74			60.35			
	4/124				304.68			60.09			
	5/125				305.63			61.04			
	6/126				305.91			61.35			
	7/127				306.32			61.73			
	8/128				306.54			61.95			
	9/129				306.54			61.95			
	10/130				307.11			62.52			
	11/131				307.42			62.72			
	12/132				307.61			63.02			
	13/133				308.68			64.09			

## AQUIFER TEST DATA

Owner St. James Village Address 128 Auglaie County Calumet State WIDate 1/29/72 Company performing test CFS & Sargent Drilling Measured by OCSWell No. Entry Meadow Distance from pumping well — Type of test Step-Drawdown Test No. 1Measuring equipment Hermit 1000 = w/ 100 p.s.i. TDX

## Time Data

Pump on: Date 1/27/72 Time 0:00 (t.)Pump off: Date — Time — (t')

Duration of aquifer test:

Pumping Recovery

## Water Level Data

Static water level 244.57Measuring point Twp 5th, 1/2 wayElevation of measuring point —

## Discharge Data

How Q measured Drill holeDepth of pump/air line 7' 0"Previous pumping? Yes ✓ No —Duration — End 1/27Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or conversion	Water level	Water level change s or s'	Discharge measurement	Rate
1/29/72					328.56			63.97		400
					308.90			64.31		
					309.44			64.85		
					310.26			65.67		
					310.67			66.08		
					310.98			66.39		
					311.90			67.31		
					312.72			68.13		
1/20/72					313.37			69.26		
					323.42			78.83	39.4	500
					325.00			80.41		
					326.98			82.39		
					327.33			82.74		
					328.27			83.68		
					328.37			83.78		
					328.72			84.13		
					328.68			83.79		
					329.41			84.82		
					329.76			85.17		
					329.82			85.23		
					330.54			85.95		
					331.42			86.83		
					332.76			86.27		
					331.55			86.96		
					332.46			87.37		
					333.17			88.76		
					333.32			89.23		
					334.27			89.70		
					334.73			90.14		



162 KODAK SAFETY FILM CYCLED IN THE USA

St. James 5's 1/11/22 Enting M & down well Step. Draw over Test

Step II  $\phi = 200 \text{ rpm}$

Step I

Step II

$\phi = 300 \text{ rpm}$

Step II

$\phi = 400 \text{ rpm}$

Step II

$\phi = 500 \text{ rpm}$

Step II

$\phi = 500 \text{ rpm}$

Step II

$\phi = 500 \text{ rpm}$

46 6012 Pump out 2900 hrs 1/30/96

Pump out 2900 hrs 1/30/96

10 3 5 7 9 3 7 6 5 4 3 2 1 0

1000

TIME DURATION OF PUMP OUT (MINUTES)

**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Owner St James Village Address Los Angeles County CA State CA

Date 1/31 - 2/1/75 Company performing test C.E. & Son Drilling Measured by DCR & WCD

Well No. Entry Meadow Distance from pumping well \_\_\_\_\_ Type of test \_\_\_\_\_ Test No. 2

Measuring equipment Hermit 1000C w/ 100 psi TDX ; 4.375" x 6.25" orifice

**Time Data****Water Level Data****Discharge Data**Pump on: Date 1/31/75 Time 1002 (t.)Pump off: Date  Time  (t')How Q measured orificeDepth of pump air line 400'

Duration of aquifer test:

Previous pumping? Yes  No 

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

Duration 4 hrs End 1/30/75Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measure- ment	Correc- tion of Conver- sion	Water level s or s'	Water level change	Discharge measur- ement	Rate	
		t	t'								
1/31	1000	0			244.05				0	0	
	1001	1			280.25				25.2	400	Initial Q = 500 gpm Downdraw to 400 in 1 min
	1002	2			288.96						
	1003	3			280.78						
	1004	4			282.17						
	1005	5			283.36						
	1006	6			284.24						
	1007	7			285.15						
	1008	8			285.28						
	1009	9			286.32						
	1010	10			286.85						
	1011	12			287.92						
	1014	14			288.87						
	1016	16			289.78						
	1018	18			290.54						
	1020	20			291.51						
	1024	24			292.54						
	1026	25			293.80						
	1032	32			294.84						
	1036	36			295.88						
	1040	40			297.29						
	1057	57			299.05						
	1100	62			300.94						
	1112	70			302.98						
	1127	80			304.15						
	1147	100			307.10						
	1220	120			307.24						
	1231	150			311.93						

Interpolating with a straight line

**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Page 7 of 1

Owner St James IV Address Los Angeles County Los Angeles State CA

Date 1/31-21/196 Company performing test CES & SARGENT DRILLING Measured by DCB & WCD

Well No. ENTRY MEADOW Distance from pumping well — Type of test Constant-Discharge Test No. 2

Measuring equipment Hemis 1000 = w/ 100 ft = TDX; 4.375" x 6.25" orifice

Time Data		Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date <u>1/31/66</u> Time <u>1800</u> (t.)	Pump off: Date _____ Time _____ (t')	Static water level <u>244.05'</u>	Measuring point <u>T.D.C.</u>	Elevation of measuring point <u>2.5 + 2.1'</u>		How Q measured <u>orifice</u>	Depth of pump air line <u>500'</u>	Previous pumping? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duration of aquifer test: Pumping _____ Recovery _____						Duration <u>4 hrs</u>	End <u>1/30</u>		

Date	Clock time	Time since pump started t	Time since pump stopped t'	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate	Obs. wells SJ-3, Petryszek, SJ-2, & Nada Cr.
1/31	1330	210			315.75		71.70				
	1400	240			316.41		72.49				
	1430	270			318.52		74.47				
	1500	300			319.59		75.54	25 1/4	400		
	1530	330			320.57		76.52				
	1600	360			321.09		77.04	25 1/4	400		
	1700	420			322.89		78.84	25 3/8	401		
	1800	480			323.26		79.21	25 1/8	399		10.1" Hg
	1900	540			324.61		80.56	25 3/16	399.9		20.1" Hg
	2000	600			325.87		81.82	25 7/16	399.9		30.11" Hg
	2100	660			326.60		82.55	25 1/4	400		T=55°F EC=217 MMOD/cm Fgsg = 30.11" Hg
	2200	720			327.41		83.36	25 1/4	400		"
	2300	780			327.70		83.65				
1/1	0000	840			328.54		84.49	25 3/16	399.9		Q↑ @ ~0040
	0100	900			328.86		84.81				
	0200	960			329.33		85.28				
	0300	1020			329.58		85.53				
	0400	1080			329.96		85.91	25 1/4	400		
	0500	1140			330.24		86.19				
	0600	1200			330.46		86.41	25 1/4	400		Q↑ @ 0730
	0800	1320			330.78		86.73				30.12" Hg Dan
	1000	1440			332.13		88.08	25 3/8	401		Q↑ @ 905
	1200	1560			332.69		88.64				36.14" Hg
	1400	1680			333.23		89.19	25 1/4	400		RN 30.06" Hg
	1600	1800			333.27		89.24	25 3/16	400.9		DCB 30.12" Hg
	1800	1710			334.52		90.47	25 7/16	400.7		T=55°F EC=217 MMOD/cm 30.13" Hg
	2000	2040			334.96		90.91	25 1/2			30.15" Hg @ 2025
	2200	2160			335.33		91.28				30.14" Hg Q 2250 = 2210 min.

**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Owner St. James's Village Address Los Angeles County State CA

Date 1/31 - 2/1/95 Company performing test CES & Sargent Drilling Measured by DCB & WWD

Well No. Entry M23202 Distance from pumping well — Type of test Constant discharge Test No. 3

Measuring equipment Horizon 1000C w/ 102 psi TDX + 4.375" x 2.25" orifice

**Time Data****Water Level Data****Discharge Data**Pump on: Date 1/31/95 Time 1910 (t.)How Q measured OrificePump off: Date   Time   (t')Depth of pump/air line 5'0"

Duration of aquifer test:

Previous pumping? Yes X No  Pumping   Recovery  Duration 4 hrs End 1/30/95Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or conversion	Water level	Water level change s or s'	Discharge measurement	Rate	Obs. wells: SJ-3, SJ-2, Nada Court Petryszak	
2/2	0200	2400			335.93			91.88				Q okay
	0400	2520			336.25			92.20				* odd reading on Horner-neq reading looks ok bar. pressure = 30.23" Hg @ 0715
	0600	2640			336.09			92.04				
	0800	2760			336.94			92.79	25 1/2" @ 820	402.4		Q okay Dan
	1000	2880			336.69			92.64	25 1/2" @ 950	401.9		30.32 kg @ 9.50
	1200	3000			337.25			93.20	25 1/2" @ 110	401.2		30.31 kg @ 1200
	1400	3120			337.38			93.33	25 1/2" @ 1310	401.4		DCB
	1600	3240			337.98			93.93	25 1/2"	401.4		30.30" Hg @ 1400
	1800	3420			338.04			93.99	25 1/2"	401.4		30.36" Hg @ 1400 30.40" Hg @ 1400
	2200	3600			338.29			94.24	25 3/8"	401.4		EE
2/3	0100	3780			338.57			94.62	25 3/8"	401.4		
	0400	3960			338.98			94.93				
	0700	4140			339.20			95.15	25 3/8"	401.4		
	1000	4320			339.36			95.31				@ 1400 hrs EC = 215.4 mmov/cm T = 53.5
	1300	4500			339.48			95.43	25 1/4	400		DCB 30.46" Hg
	1600	4680			339.80			95.75	25 1/4	400		rains 1/3 hr 30.47" Hg
	1900	4860			340.02			95.97	25 1/2"	397.7		
	2200	5040			340.46			96.41	25 3/16			30.45 m/w
2/4	0100	5280			340.71			96.66	25 3/16			30.45 lite rain
	0600	5520			340.58	11		96.53	25 3/16			30.44 raining
	0815	-			-			-	24 7/8" $\xrightarrow{0.1}$ 25 3/8"			DAN Q1 @ 0810 (25 3/8")
	0900	5700			341.84			97.79	25 1/2"			30.48" Hg
	1200	5880			341.90			97.85	25 3/8" @ 110			Heavy Rain -Trailer Leaks 30.45" Hg @ 1200
	1400	6000			342.15			98.10	25 3/8"			30.40" Hg DCB
	1800	6140			342.17			98.14	25 1/4			30.46" Hg
	2200	6430			342.61			98.76	25 1/8			30.50 Hg m/w hard rain
2/5	0200	6720			343.03			98.98	25 1/8			30.45 Lg. i.e rain
	0600	6960			342.94			98.89	25			30.55 med. rain
									Q1 + 25 1/2" @ 0815 RV			KV @ 0815

## AQUIFER TEST DATA

Owner St. James Village Address Los Angeles County  State CA

Date 1/31/96 - 2/1/96 Company performing test CES and Sargent Drilling Measured by DCB and WCND

Well No. Entry Meadow Distance from pumping well - Type of test Constant Discharge Test No. 2

Measuring equipment Hermit 1000C w/ 100 psi TDX and 4.375" x 6.25" orifice

Time Data			Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date	1/31/96	Time	1000	(t.)	Static water level	244.05'	How Q measured	orifice		
Pump off: Date		Time		(t')	Measuring point	T.O.C.	Depth of pump/air line	500		
Duration of aquifer test:					Elevation of measuring point	L.S. + 2'	Previous pumping? Yes	X No		
Pumping		Recovery					Duration	4 hrs.	End	

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate	
2/5/96	1400	7440			344.61		100.56		25 1/4	400	
	1800	7680			344.67		100.62		25 1/4	400.9	
	2200	7920			345.36		101.31		25 3/4	399.9	DCD
2/6/96	0200	8160			345.14		101.09		25 3/4	399.9	30.62 Hg @ 0230
	0600	8400			345.53		101.53		25 3/4	399.9	30.66" Hg
	1000	8640			346.11		102.06		25 3/8	401.4	Q↑ @ 0845 EE to 25 3/8" @ 1030
	1400	8880			346.98		102.93		25 1/2	402.4	20.66" Hg @ 1430
	1800	9120			347.12		103.07		25 1/2	401.9	30.70" Hg @ 1803
	2200	9360			347.84		103.79		25 1/2"	402.4	RV 30.67" Hg @ 2300
2/7/96	0200	9600			347.50		103.45	2 1/4" 0.0100	25 1/2"	402.4	
	0600	9840			348.00		103.95	25 1/2"	402.4		30.65" Hg @ 0600
	1000	10080			348.38		104.33	25 5/8"	402.4		30.61" Hg @ 10:00
	1400	10400			348.06		104.01	25 1/2" 3/16 in	402.4		DCB 30.52" Hg 56.2°F 214 MMH2O
	1800	10800			348.60		104.55	25 5/8"	402.4		Hg 30.53 @ 1030 EE
2/8/96	0200	11160			349.04		104.99	25 5/8"	402.4		Hg 30.47 @ 0440
	0600	11520			348.85		104.80	25 1/4" 1200	400		DAN 30.43" Hg
	1000	11880			348.97		104.92	25 1/2" 1200	402.4		sample well = 124.7 mm 30.35" Hg
	1400	12240			349.23		105.18	25 1/2"	402.4		
2/9/96	0400	12600			349.13		105.08	25 5/8"	402.4		Hg 30.33
	1000	12960			349.82		105.77	25 5/8" 1200	402.4		Hg @ 30.37 @ 1000 EE
	1600	13320			349.60		105.55	25 1/2"	402.4		20.34" Hg @ 1650
	2200	13680			350.11		106.06	25 5/8"	402.4		30.36" Hg RV
2/10	0200	13920			350.29		106.24				Hg = 30.40" @ 0500
	0600	14160			350.95		106.90				EC = 212 MMH2O/cm
	1000	14400			-			26 1/8"			T = 56.3°F

**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Page \_\_\_\_\_ of \_\_\_\_\_

Owner St. Tanks Inc. Address Los Angeles County CA State CA

Date 1/31-2/1/96 Company performing test GES & Sargent Drilling Measured by DG & WCD

Well No. SJ-3 Distance from pumping well \_\_\_\_\_ Type of test Constant Discharge Test No. 5

Measuring equipment \_\_\_\_\_

Time Data				Water Level Data				Discharge Data				Comments on factors affecting test data	
Pump on: Date	Time	Pump off: Date	Time	Static water level	Measuring point	Elevation of measuring point	How Q measured	Depth of pump air line	Previous pumping? Yes	No	Duration		
Pump on: Date	<u>1/31/96</u>	Time	<u>1000</u>	(t)	Static water level	<u>245.52</u>	How Q measured	<u>0</u>	Depth of pump air line	<u>500'</u>	Previous pumping? Yes	<input checked="" type="checkbox"/>	No
Pump off: Date		Time		(t')	Measuring point	<u>T.O.C.</u>	Duration		End	<u>1/30/96</u>			
Duration of aquifer test:					Elevation of measuring point	<u>245.52</u>							
Pumping		Recovery											
Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate			
1/31/96	1000	0			245.52			0					
	1001	1			246.36			0.84					
	1002	2			246.98			1.46					
	1003	3			247.57			1.99					
	1004	4			247.98			2.46					
	1005	5			248.42			2.80					
	1006	6			248.86			3.34					
	1007	7			249.23			3.71					
	1008	8			249.61			4.09					
	1009	9			249.91			5.90					
	1010	10			250.17			6.51					
	1011	12			250.89			6.84					
	1014	14			251.57			7.46					
	1016	16			252.07			8.02					
	1013	18			252.60			8.55					
	1020	20			253.13			9.08					
	1024	24			254.13			10.08					
	1028	28			255.10			11.05					
	1032	32			256.01			11.96					
	1034	36			256.81			12.80					
	1040	40			257.66			13.61					
	1037	50			259.57			15.52					
	1100	60			261.29			17.24					
	1110	70			262.82			18.37					
	1120	80			264.19			20.14					
	1140	100			266.69			22.62					
	1200	120			268.78			23.66		400			
	1220	150			271.40			25.38					

**ENTRY MEASURED WELL  
AQUIFER TEST DATA**

Owner S. James U. 1149 Address 125 Argyle County CA State CA

Date 1/31-21 / 76 Company performing test CES of Sargent Drilling Measured by DCB & WCD

Well No. 55-3 Distance from pumping well \_\_\_\_\_ Type of test Constant discharge Test No. 2

Measuring equipment Herritt 1000C w/ 100 ft TDX

**Time Data**

Pump on: Date 1/31/96 Time 1210 (t.)

Pump off: Date \_\_\_\_\_ Time \_\_\_\_\_ (t')

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

**Water Level Data**

Static water level 245.52'

Measuring point TDC (2")

Elevation of measuring point \_\_\_\_\_

**Discharge Data**

How Q measured \_\_\_\_\_

Depth of pump/air line \_\_\_\_\_

Previous pumping? Yes    No   

Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors affecting test data

Date	Clock time	Time	Time	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate
		since pump started	since pump stopped						
1/31	1330	210		275.27			29.75		
	1400	240		276.74			31.22		
	1430	270		277.99			32.47		
	1500	300		278.5			33.53		
	1530	330		279.96			34.44		
	1600	360		280.77			35.25		
	1700	420		282.08			36.56		
	1800	480		283.08			37.56		
	1900	540		283.93			38.42		
	2000	600		284.67			39.15		
	2100	660		285.27			39.75		
	2200	710		285.77			40.25		EE
	2300	780		286.27			40.75		
2/1	0000	840		286.67			41.15		
	0100	900		287.08			41.56		
	0200	960		287.45			41.93		
	0300	1020		287.77			42.25		
	0400	1080		288.05			42.53		
	0500	1140		288.30			42.78		
	0600	1200		288.55			43.03		
	0800	1320		289.02			43.50		
	1000	1440		289.51			43.99		DD
	1200	1560		289.98			44.46		
	1400	1680		290.30			44.78		RV
	1600	1720		290.53			45.06		
	1800	1920		290.86			45.34		
	2000	2040		291.17			45.62		
	2200	2160		291.45			45.93		

**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Owner St James Village Address Los Angeles County State CA

Date 1/31/76 Company performing test GES & Sargent Drilling Measured by WCB & NCSB

Well No. ST-3 Distance from pumping well \_\_\_\_\_ Type of test Constant Discharge Test No. 2

Measuring equipment Hermit 1000c w/ 100 psi TDX

**Time Data**Pump on: Date 1/31/76 Time 1000 (t.)

Pump off: Date \_\_\_\_\_ Time \_\_\_\_\_ (t')

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

**Water Level Data**Static water level 245.52'Measuring point T.O.C. (2")

Elevation of measuring point \_\_\_\_\_

**Discharge Data**

How Q measured \_\_\_\_\_

Depth of pump/air line \_\_\_\_\_

Previous pumping? Yes    No   

Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or conversion	Water level	Water level change s or s'	Discharge measurement	Rate			
2/3	0100	2400			291.92			46.40					
	0400	2520			292.14			46.62					
	0600	2640			292.33			46.81					
	0800	2760			292.50			47.00					
	1000	2880			292.79			47.20					
	1200	3000			292.95			47.40					
	1400	3120			293.07			47.52				DCB	
	1600	3240			293.24			47.70					
	1800	3420			293.48			47.90					
	2200	3600			293.73			48.20				EE	
2/3	0100	3780			293.92			48.40					
	0400	3960			294.04			48.52					
	0700	4140			294.20			48.68					
	1000	4320			294.42			48.90					
	1300	4500			294.51			49.09				B.P. 30.43	
	1600	4580			294.67			49.15				DCB	
	1900	4860			294.84			49.32					
	2200	5040			294.98			49.46				MW	
2/4	0200	5280			295.14			49.62					
	0600	5520			295.26			49.74					
	0900	5700			295.40			49.90				DAN	
	1200	5880			295.76			50.24					
	1400	6000			295.87			50.32				DCB	
	1900	6240			296.04			50.52					
	2200	6480			296.29			50.77				MW	
2/5	0200	6720			296.38			50.86					
	1600	6960			296.60			51.08					
	1000	7200			296.92			51.40				RV	

## AQUIFER TEST DATA

Owner St. James Village

Address \_\_\_\_\_

Los Angeles

County \_\_\_\_\_

State CADate 1/31/96 - 2/1/96 Company performing test CES and Sargent Drilling Measured by DCB and WCDWell No. SJ-3

Distance from pumping well \_\_\_\_\_

Type of test Constant DischargeTest No. 2Measuring equipment Hermit 1000 w/ 100 psi TDX

## Time Data

Pump on: Date 1/31/96 Time 1000 (L.)

## Water Level Data

Pump off: Date \_\_\_\_\_ Time \_\_\_\_\_ (L.)

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

Static water level 245.52'

## Discharge Data

How Q measured \_\_\_\_\_

Measuring point T.O.C. (2")Depth of pump air line 5700

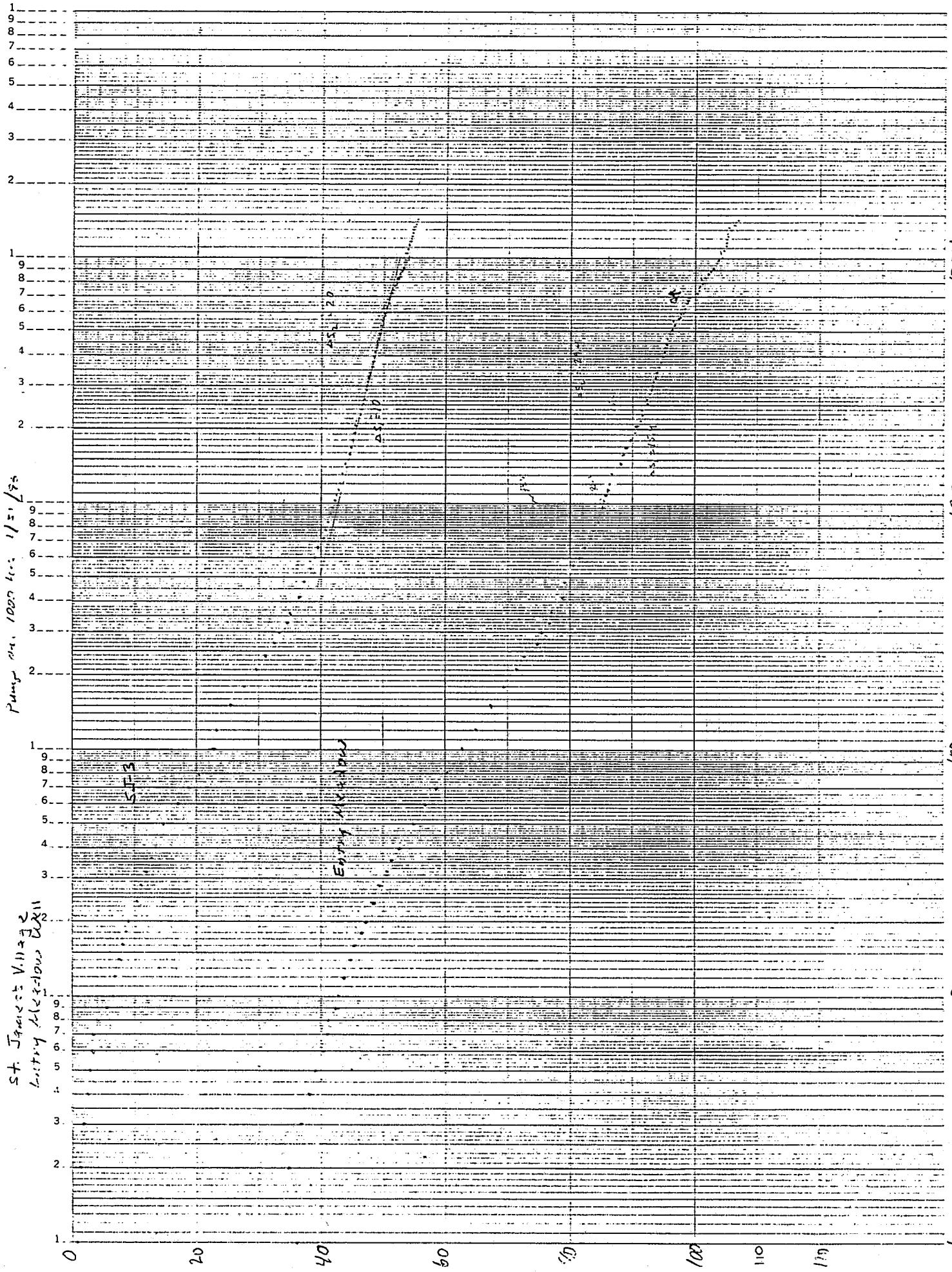
Elevation of measuring point \_\_\_\_\_

Previous pumping? Yes ✓ No     Duration 4 hrs End 1/32/96Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate		
2/5/96	1400	7440			297.13			51.61				
	1800	7680			297.32			51.80				
	2200	7920			297.54			52.02				
2/6/96	0200	8160			297.73			52.21				
	0600	8400			297.88			52.36				
	1000	8640			298.10			52.58				
	1400	8880			298.38			52.86				
	1800	9120			298.57			53.05				
	2200	9360			298.73			53.21				RV
2/7/96	0200	9600			298.91			53.39				
	0600	9840			299.01			53.49				
	1000	10080			299.13			53.61				WDH
	1400	10440			299.26			53.74				D=5
	2200	10800			299.45			53.93				EE
2/8	0400	11160			299.60			54.08				
	1000	11520			299.70			54.18				DnN
	1400	11880			299.82			54.30				D=5
	2200	12240			299.91			54.39				
2/9	0400	12600			300.04			54.52				
	1000	12960			300.23			54.71				EE
	1400	13320			300.35			54.83				PCD
	2200	13680			300.60			55.08				RV
2/10	0200	13920			300.69			55.17				
	0600	14160			300.85			55.33				D=5
	1000	14400			301.01							

**KoE** SEMI LOGARITHMIC CYCLES X 70 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.

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K•E SEMI-LOGARITHMIC CYCLES X 70 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.

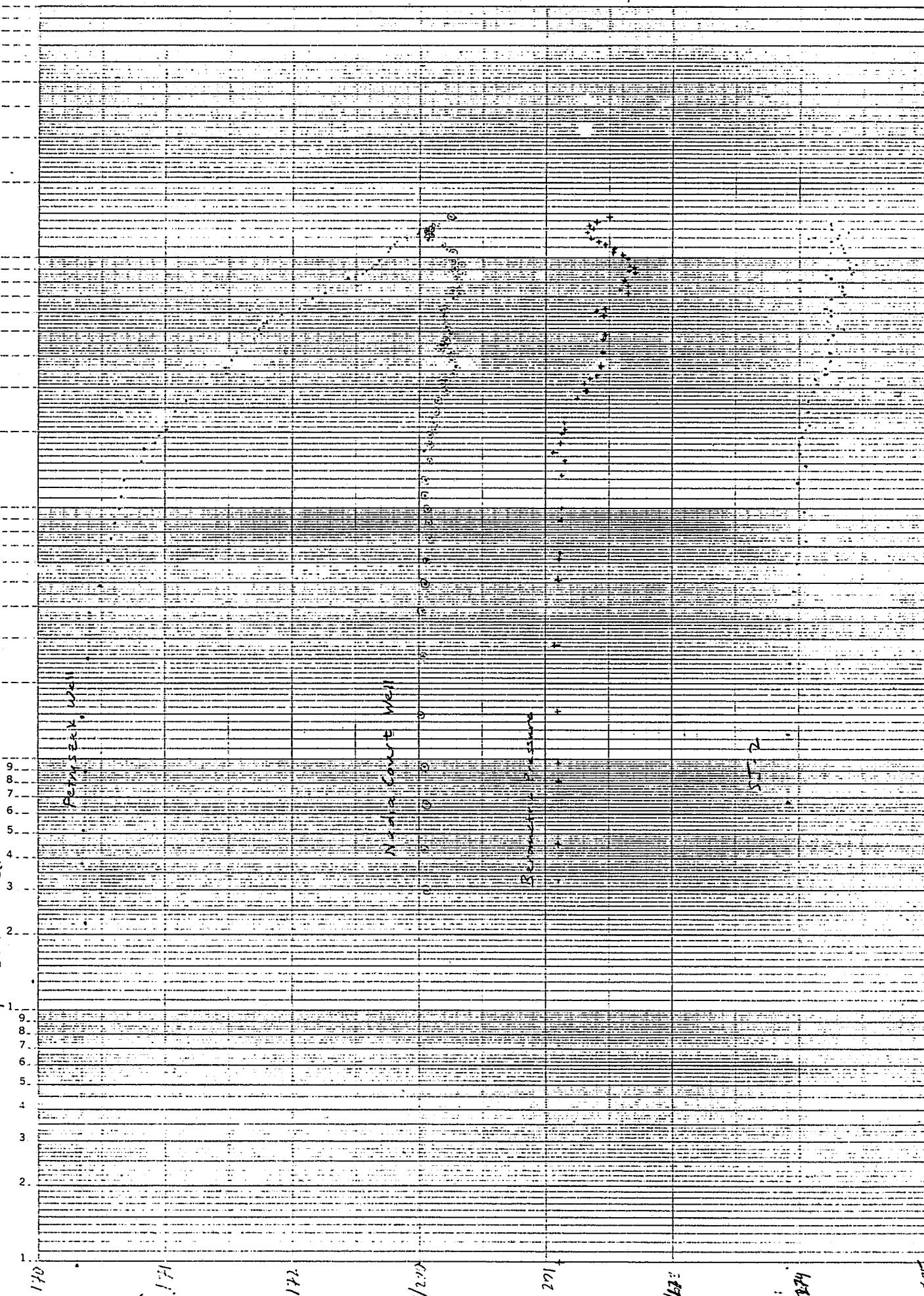
DISTANTIATION  
WELL DATA

St. Jannet's  
County, Alessandria

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Printed on: 1000 hrs 1/31/96

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TIME DURATION PULSATION RATE  
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**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Page \_\_\_\_\_ of \_\_\_\_\_

Owner St James's Village Address \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

Date 1/31 - 2/1 / 96 Company performing test CES & Sargent Drilling Measured by DCB & WCUU

Well No. Nada Cr. Distance from pumping well \_\_\_\_\_ Type of test Constant Discharge Test No. 2

Measuring equipment Olympic Sounder

**Time Data**

Pump on: Date 1/31/96 Time 1000 (t.)

Pump off: Date  Time  (t')

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

**Water Level Data**

Static water level \_\_\_\_\_

Measuring point T.O.G.

Elevation of measuring point \_\_\_\_\_

**Discharge Data**

How Q measured \_\_\_\_\_

Depth of pump/air line \_\_\_\_\_

Previous pumping? Yes    No   

Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors  
affecting test data

Other obs. wells:  
Petry's Crk., Nada Cr.,  
+ SJ-2

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate		
1/31/96	030	-110			200.00							
	1030	30			200.07							
	1043	43			200.05							
	1056	56			200.07							
	1134	94			200.05							
	1230	150			200.01							
	1416	256			200.03							
	1626	386			200.02							
	1815	495			200.06							
	2012	612			200.07							
	2237	757			201.14	-1.05	200.09					
2/1/96	0032	872			201.13	"	200.08					EE CHECKED MSMT X2 (CONNECTION)
	0233	993			201.12	"	200.07					
	0443	1123			201.09	"	200.04					
	0730	1290			201.10	"	100.05					
	1110	1510			201.14	"	200.07					DAV (from top of pool)
	1405	1685			201.09	"	200.04					RV "
	1610	1810			200.09							DCB
	1830	1910			200.09							
	2018	2058			200.13							
	2230	2200			201.16	-1.05	200.11					RV
2/2/96	0200	2410			201.18	-1.05	200.13					
	0630	2680			201.21	-1.05	200.16					
	1050	2930			201.27	-1.05	200.22					DD
	1447	3168			200.18							DCB
	1624	3254			200.21							
	1907	3427			200.27							
	2232	3632			201.24		200.29					EE
					201.20		200.25					

**AQUIFER TEST DATA**Owner ST. JAMES VILLAGE Address \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_Date 1/31 - 2/1/96 Company performing test CES, SARLENT DRILLING Measured by DCB & WCUDWell No. NADIA CRT Distance from pumping well \_\_\_\_\_ Type of test CONSTANT DISCHARGE Test No. 2Measuring equipment OLYMPIC SOUNDER**Time Data**Pump on: Date 1/31/96 Time 1000 (t.)

Pump off: Date \_\_\_\_\_ Time \_\_\_\_\_ (t')

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

**Water Level Data**

Static water level \_\_\_\_\_

Measuring point T.O.C.

Elevation of measuring point \_\_\_\_\_

**Discharge Data**

How Q measured \_\_\_\_\_

Depth of pump/air line \_\_\_\_\_

Previous pumping? Yes \_\_\_\_\_ No \_\_\_\_\_

Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors  
affecting test data

Date	Clock time	Time	since pump started	Time	since pump stopped	1/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate	
		t	t'										
2/3	0642	4122					201.29	-1.05	200.24				
	1008	4328					201.32	"	200.27				
	105	4505					201.30	"	200.25				
	1608	4688					200.21	"	200.16				DCB light rain
	1858	4838					200.25						
	2205	5045					201.28	-1.05	200.23				
2/4	0200	5280					201.26	"	200.21				
	0604	5320					201.22	"	200.17				
	1140	5860					201.24	"	200.19				DAN Heavy Rain
	1236	6096					200.17						DCB
	1757	6237					200.22						
	2185	6475					201.32	-1.05	200.27				mw
2/5	0215	6735					201.34		200.29				
	0605	6965					201.32		200.27				
	1000	7200					201.36		200.31				RV
	1415	7455					200.26						DCB
	1810	7690					200.31						
2/6	0225	8185					201.35	-1.05	200.30				DAN
	0640	8440					201.34	-1.05	200.29				
	1020	8660					201.39	-1.05	200.34				EE
	1418	8708					200.25						DCB
	1752	9112					200.23						
2/7	2340	9404					201.37	-1.05	200.32				RV
	0620	9804					201.32	-1.05	200.27				
	1035	10059					201.25	-1.05	200.22				W2H
	1612	10452					200.26						DCB
	2217	10817					201.21	-1.05	200.16				EE
2/8	0433	11193					201.18						



**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Page 1 of 1

Owner St James Village Address Los Angeles County Los Angeles State CA

Date 1/31 - 2/1/96 Company performing test CES & Sargent Drilling Measured by DCB & WCHS

Well No. SJ-2 Distance from pumping well \_\_\_\_\_ Type of test Constant-Discharge Test No. 2

Measuring equipment Olympic Counter

**Time Data**

Pump on: Date 1/31/96 Time 1920 (t.)

Pump off: Date  Time  (t')

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

**Water Level Data**

Static water level \_\_\_\_\_

Measuring point \_\_\_\_\_

Elevation of measuring point \_\_\_\_\_

**Discharge Data**

How Q measured \_\_\_\_\_

Depth of pump/air line \_\_\_\_\_

Previous pumping? Yes    No   

Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	Discharge measurement	Rate		
1/31	2200	-60			673.70	-400'	273.70	2'				
	1107	67			673.92	"	273.92					
	1205	125			673.91	"	273.91					
	1400	240			673.93	"	273.93					
	1600	360			673.92	"	273.92					
	1748	468			673.75	"	273.75					
	1948	588			673.99	"	273.99					
	2207	727			674.06	"	274.06					EE
	0205	965			674.03	"	274.03					
	0700	1260			673.99	"	273.99					
	1040	1480			674.05	"	274.05					DD Rainy
	1345	1665			674.00	"	274.00					RV
	1546	1784			674.00	"	274.00					DCB
	1730	1910			674.02	"	274.02					foggy 2 times since 1/31
	1954	2036			674.06	"	274.06					
	2205	2167			674.09	"	274.09					RV
2/1/96	0225	2427			674.08	"	274.08					
	0655	2697			674.08	"	274.08					
	1620	2900			674.12	"	274.12					DD.
	1220	3020			674.13	"	274.13					
	1418	3138			674.15	"	274.15					DCB
	1555	3235			674.13	"	274.13					
	1845	3405			674.21	"	274.21					
	2212	3612			674.21		274.21					
1/3	0210	3850			674.25		274.25					
	0655	4135			674.24		274.24					
	1950	4310			674.34		274.34					
	2243	4430			674.32		274.32					

**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Page 2 of 1

Owner St James' Village Address Los Angeles County CA State CA

Date 1/31-2/1/96 Company performing test CES & Sargent Drilling Measured by DCB & WCHD

Well No. SJ-2 Distance from pumping well \_\_\_\_\_ Type of test Constant-Discharge Test No. 2

Measuring equipment Olympic Sounder

Time Data					Water Level Data				Discharge Data			Comments on factors affecting test data	
Pump on: Date	1/31/96	Time	1220	(L.)	Static water level				How Q measured				
Pump off: Date		Time		(L')	Measuring point				Depth of pump/air line				
Duration of aquifer test:					Elevation of measuring point				Previous pumping? Yes	No			
Pumping		Recovery							Duration	End			

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measure- ment	Correction or Conversion	Water level	Water level change s or s'	Discharge measure- ment	Rate	
		t	t'								
2/3	1840	4840			674.27	-400	274.27				DCB light drizzle
	2220	5060			674.36	"	274.36				" "
2/4	0215	5295			674.31	"	274.31				
	0615	5535			674.22	"	274.22				
	11:10	5830			674.26	"	274.26				DRW Heavy Rain
	1315	6075			674.25	"	274.25				
	1736	6216			674.21	"	274.21				
2/5	0620	6980			?, 674.25	"	274.25				NW
	0945	7185			674.35	"	274.35				RV
	1405	7445			674.33	"	274.33				
	1733	7653			673.34						
2/6	0205	8165			674.25	"	274.25				DRW
	0700	8460			674.28	"	274.28				
	1000	8640			674.42	"	274.42				EE
	1353	8878			674.42	"	274.42				DCB
	1720	9080			674.49	"	274.49				
	2330	9390			674.45	"	274.45				RV
17	0635	9815			674.39	"	274.39				
	1015	10035			674.40	"	274.40				WSH
	1545	10425			674.37	"	274.37		2/10	0450	DCB
	2200	10800			674.35		274.35				EE
2/8	0415	11175			674.33	"	274.33				
	1020	11540			674.25	"	274.25				DD
	1522	11862			674.20	"	274.20				
	2213	12258			674.31	"	274.32				
2/9	0410	12610					274.37				
	1018	12978			674.25	"	274.25				EE
	1518	13278			674.25	"	274.25				DCB
	2218	14142			674.25		274.25				DRW

**ENTRY MEXICO WELL**  
**AQUIFER TEST DATA**

Owner St. James's Village Address Los Angeles County CA State CA

Date 1/31-2/1/96 Company performing test CES & Sargent Drilling Measured by DRB & WCN

Well No. Petryszak Distance from pumping well \_\_\_\_\_ Type of test Constant-Discharge Test No. 2

Measuring equipment Olympic Sounder

**Time Data**Pump on: Date 1/31/96 Time 1000 (t)Pump off: Date  Time  (t')

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

**Water Level Data**Static water level 177.55

Measuring point \_\_\_\_\_

Elevation of measuring point \_\_\_\_\_

**Discharge Data**

How Q measured \_\_\_\_\_

Depth of pump/air line \_\_\_\_\_

Previous pumping? Yes    No   

Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measure- ment	Correc- tion or Conversion	Water level	Water level change s or s'	Discharge measure- ment	Rate	
		t	t'								
	0920	-40			170.31						
	1022	22			170.38						
	1038	38			170.35						
	1051	57			170.36			0.01			
	1129	89			170.39			0.04			
	1224	144			170.37			0.01			
	1410	257			170.40			0.05			
	1618	378			170.41			0.01			
	1808	498			170.49			0.14			Pump came on after reading
	2006	606			170.55			0.20			
	2230	750			170.58			0.23			EE
1/96	0026	866			170.61			0.26			
	0228	988			170.64			0.23			
	0436	1116			170.65			0.30			
	0725	1285			170.71			0.36			
	1105	1505			170.81			0.40			55.5 PSI ON TANK D/W
	1410	1690			170.84			0.49			RV
	1605	1805			170.93			0.58			DCB
	1818	1938			170.95			0.60			
	2012	2052			171.01			0.66			
2/1/96	2240	2200			171.02			0.77			RV checked twice
	0210	2440			171.09			0.74			
	0640	2680			171.18			0.82			
	1040	2920			171.21			0.85			Dam 44 psi
	1442	3162			171.32			1.72			DCB
	1618										Pump on
	1858	3418			171.49			1.14			
	2226	3626			171.47			1.12			EE
					171.57						

**ENTRY MEADOW WELL**  
**AQUIFER TEST DATA**

Page 2 of 1

Owner ST. JAMES VILLAGE Address LOS ANGELES County  State CA

Date 1/31 - 2/1 / 96 Company performing test CES & SARGENT DRILLING Measured by DCB & WCUD

Well No. PETRYSZAK Distance from pumping well \_\_\_\_\_ Type of test CONSTANT DISCHARGE Test No. 2

Measuring equipment OLYMPIC SOUNDER

**Time Data**

Pump on: Date 1/31/96 Time 1000 (t.)

Pump off: Date \_\_\_\_\_ Time \_\_\_\_\_ (t')

Duration of aquifer test:

Pumping \_\_\_\_\_ Recovery \_\_\_\_\_

**Water Level Data**

Static water level 170.25'

Measuring point \_\_\_\_\_

Elevation of measuring point \_\_\_\_\_

**Discharge Data**

How Q measured \_\_\_\_\_

Depth of pump/air line \_\_\_\_\_

Previous pumping? Yes        No       

Duration \_\_\_\_\_ End \_\_\_\_\_

Comments on factors  
affecting test data

Date	Clock time	Time since pump started	Time since pump stopped	t/t'	Water level measure- ment	Correc- tion or Conversion	Water level	Water level change s or s'	Discharge measure- ment	Rate	
		t	t'								
2/3	0636	4116			171.56			1.21			EE
	10:00	4320			171.66			1.31			
	12:55	4445			171.65			1.28			
	1600	4680			171.70			1.35			
	1852	4852			171.76			1.41			154 ft rain.
	2200	5040			171.73			1.38			
2/4	0155	5275			171.78			1.43			
	0555	5515			171.80			1.45			
	1130	5850			171.92			1.57			DAN (50 PSI)
	1530	6090			171.66			1.31			The area around the well site is flooding
	1720	6230			172.06			1.71			
	2150	6470			172.06			1.71			MM
2/5	0210	6730			172.10			1.75			
	0600	6960			172.14			1.89			
	1005	7205			172.26			1.91			RV
	1410	7450									Pump was running
	1800	7680			172.51			2.16			Measured 2 min after pump off from cycling from 170 to 172. Why the H. rise?
2/6	0220	8180			172.44			2.09			49 PSI on tank Dan
	0635	8435			172.50			2.15			46 PSI on tank
	1015	8655			172.55			2.20			EE
	1420	8900			172.58			2.23			DCB
	1745	9105			172.63			2.28			
	2345	9405			172.65			2.30			RV
2/7/96	0615	9795			172.69			2.34			
	1025	10045			172.78			2.43			WSDH
	1605	10445			172.76						DCB
	2212	10812			172.77						EE
2/8/96	0426	11186			172.80						



ST. JAMES'S VILLAGE  
ENTRY MEADOW WELL PUMPING TEST

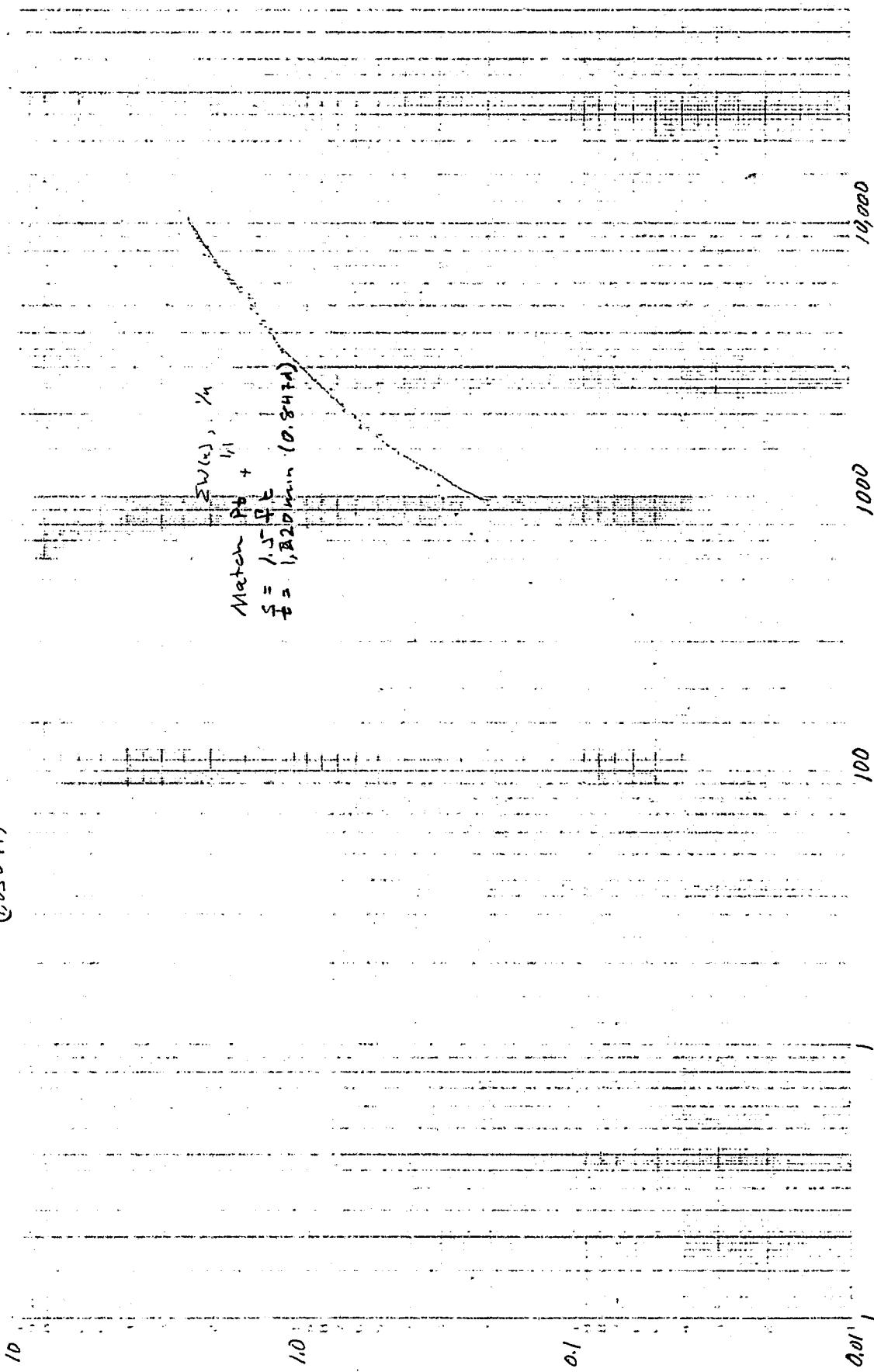
DATA FOR THE PETROZAK MODEL

$$\frac{Q}{T} = \frac{\rho}{4\pi s} w(z) = \frac{400 \text{ ft}^3}{4 \pi \times 1.5 \text{ ft}} \times \frac{1440 \text{ min}}{1 \text{ day}} \times \frac{1 \text{ ft}^2}{7.48 \text{ gal}} = 4,085 \frac{\text{ft}^2}{\text{day}}$$

$$s = \frac{1 \times 4,085 \text{ ft}^2/\text{day}}{(0.5 \times 4\pi)} = 0.847457 = 0.0026$$

$$s = \frac{Q}{4\pi T} w(z)$$

$$s = \frac{4,085}{4\pi \times 1} \text{ ft}$$



Pump Location, z (feet)

**APPENDIX D**  
**LABORATORY REPORTS**

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JAN 31 1996

CES, INC.

JAN 31  
CES, INC.

Laboratory  
Analysis Report



Sierra  
Environmental  
Monitoring, Inc.

CES, INC.  
DALE BUGENIG  
1105 TERMINAL WAY, SUITE 304  
RENO NV 89502

Date : 1/30/96  
Client : CES-001  
Taken by: CLIENT-D. BUGENIG  
Report : 15424  
PO# :

Page: 1

Sample	Collected Date Time	ALKALINITY MG/L CACO3	ALKALINITY TOTAL MG/L CACO3	PH S.U.	TURBIDITY NTU	COLOR APPARENT COLOR UNIT	TOTAL DISSCL. SOLIDS MG/L
NADIA COURT WELL	1/18/96 10:00	125B	125	6.80	0.60	<5	202
Sample	Collected Date Time	NITRATE-N MG/L	NITRITE-N MG/L	ARSENIC AA HYDRIDE MG/L	BARIUM ICP MG/L	CALCIUM ICP MG/L	CHROMIUM ICP MG/L
NADIA COURT WELL	1/18/96 10:00	0.2N	<0.02N	0.006	0.10	23	< 0.02
Sample	Collected Date Time	COPPER, ICP MG/L	IRON, ICP MG/L	MAGNESIUM ICP MG/L	MANGANESE ICP MG/L	MERCURY AA COLD VAPOR MG/L	NICKEL ICP MG/L
NADIA COURT WELL	1/18/96 10:00	< 0.02	0.04	16	< 0.01	<0.0005	< 0.04
Sample	Collected Date Time	POTASSIUM ICP MG/L	SELENIUM AA HYDRIDE MG/L	SODIUM ICP MG/L	ZINC ICP MG/L	LEAD AA FURNACE MG/L	CADMIUM AA FURNACE MG/L
NADIA COURT WELL	1/18/96 10:00	4.8	<0.001	12	< 0.02	<0.002	<0.0002
Sample	Collected Date Time	SILVER AA FURNACE MG/L	CHLORIDE MG/L	CYANIDE, TOTAL MG/L	FLUORIDE MG/L	SULFATE MG/L	MBAS SURFACTANTS MG/L
NADIA COURT WELL	1/18/96 10:00	<0.0005	1.5	<0.005	<0.1	6.2	<0.05
Sample	Collected Date Time	THALLIUM AA FURNACE MG/L	BERYLLIUM AA FURNACE MG/L	ANTIMONY AA FURNACE MG/L	ORGANICS ANAL TO FOLLOW	RADIOLOGICAL TO FOLLOW	
NADIA COURT WELL	1/18/96 10:00	<0.0005	<0.0002	<0.002	YES	YES	

Approved By:

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

1135 Financial Blvd.

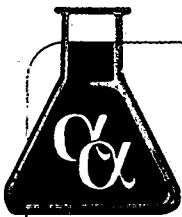
Reno, NV 89502

Phone (702) 857-2400

FAX (702) 857-2404

William F. Pillsbury  
President

John C. Seher  
Manager



# Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21  
 Sparks, Nevada 89431  
 702-355-1044  
 FAX: 702-355-0406  
 1-800-283-1183

Boise, Idaho  
 (208) 336-4145

Las Vegas, Nevada  
 (702) 386-6747

## ANALYTICAL REPORT

Sierra Environmental Monitoring, Inc.  
 1135 Financial Boulevard  
 Reno, NV 89502

Job #: 1919  
 Phone: (702) 857-2400  
 Attn: John C. Seher

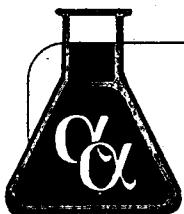
Sampled: 01/18/96      Received: 01/18/96      Analyzed: 01/18/96  
 Alpha Analytical Number: SEM011896-01  
 Client I.D.: Nadia Court Well (9601-492)

### Report of GC/MS Analysis for SDWA VOLATILES PLUS LISTS 1 AND 3 UNREGULATED COMPOUNDS EPA 524.2

Compound	Concentration ug/L	Detection Limit	Compound	Concentration ug/L	Detection Limit
8 Regulated Volatile Organic Compounds (VOC's) (Phase I)					
1. Benzene	ND	0.50 ug/L	26. Chlorodibromomethane	ND	0.50 ug/L
2. Vinyl Chloride	ND	0.50 ug/L	27. Chloroethane	ND	0.50 ug/L
3. Carbon tetrachloride	ND	0.50 ug/L	28. Chloroform	ND	0.50 ug/L
4. 1,2-Dichloroethane	ND	0.50 ug/L	29. Chloromethane	ND	0.50 ug/L
5. Trichloroethylene	ND	0.50 ug/L	30. o-Chlorotoluene	ND	0.50 ug/L
6. p-Dichlorobenzene	ND	0.50 ug/L	31. p-Chlorotoluene	ND	0.50 ug/L
7. 1,1-Dichloroethylene	ND	0.50 ug/L	32. Dibromomethane	ND	0.50 ug/L
8. 1,1,1-Trichloroethane	ND	0.50 ug/L	33. m-Dichlorobenzene	ND	0.50 ug/L
10 Regulated Volatile Organic Compounds (VOC's) (Phase II)					
9. cis-1,2-Dichloroethylene	ND	0.50 ug/L	34. 1,1-Dichloroethane	ND	0.50 ug/L
10. 1,2-Dichloropropane	ND	0.50 ug/L	35. 1,1-Dichloropropene	ND	0.50 ug/L
11. Ethylbenzene	ND	0.50 ug/L	36. 1,3-Dichloropropane	ND	0.50 ug/L
12. Monochlorobenzene	ND	0.50 ug/L	37. e,z-1,3-Dichloropropene	ND	0.50 ug/L
13. o-Dichlorobenzene	ND	0.50 ug/L	38. 2,2-Dichloropropane	ND	0.50 ug/L
14. Styrene	ND	0.50 ug/L	39. 1,1,1,2-Tetrachloroethane	ND	0.50 ug/L
15. Tetrachloroethylene	ND	0.50 ug/L	40. 1,1,2,2-Tetrachloroethane	ND	0.50 ug/L
16. Toluene	ND	0.50 ug/L	41. 1,2,3-Trichloropropane	ND	0.50 ug/L
17. trans-1,2-Dichloroethylene	ND	0.50 ug/L	List 3 - Monitoring Required at State Discretion		
18. Xylenes (total)	ND	0.50 ug/L	42. Bromochloromethane	ND	0.50 ug/L
3 Regulated Volatile Organic Compounds (VOC's) (Phase V)					
19. Dichloromethane	ND	0.50 ug/L	43. n-Butylbenzene	ND	0.50 ug/L
20. 1,1,2-Trichloroethane	ND	0.50 ug/L	44. Dichlorodifluoromethane	ND	0.50 ug/L
21. 1,2,4-Trichlorobenzene	ND	0.50 ug/L	45. Fluorotrichloromethane	ND	0.50 ug/L
List 1 - Unregulated Compounds - All Systems					
22. Bromobenzene	ND	0.50 ug/L	46. Hexachlorobutadiene	ND	0.50 ug/L
23. Bromodichloromethane	ND	0.50 ug/L	47. Isopropylbenzene	ND	0.50 ug/L
24. Bromoform	ND	0.50 ug/L	48. p-Isopropyltoluene	ND	0.50 ug/L
25. Bromomethane	ND	0.50 ug/L	49. Naphthalene	ND	0.50 ug/L
ND - Not Detected					

Approved By:

*Roger L. Scholl* Date: 2/8/96  
 Roger L. Scholl, Ph.D.  
 Laboratory Director



**Alpha Analytical, Inc.**

255 Glendale Avenue, Suite 21  
Sparks, Nevada 89431  
(702) 355-1044  
FAX: 702-355-0406  
1-800-283-1183

Boise, Idaho  
(208) 336-4145

**RECEIVED**

**FEB 13 1996**

Las Vegas, Nevada  
(702) 386-6747

**CES, INC.**

**ANALYTICAL REPORT**

Sierra Environmental Monitoring, Inc.  
1135 Financial Boulevard  
Reno, NV 89502  
Attn: John C. Seher

Client ID: 1919 - Nadia Ct. Well (9601-492)  
Lab ID: SEM011896-01  
Sampled: 01/18/96  
Received: 01/18/96

**National Primary Drinking Water Phase II and Phase V  
Regulated and Unregulated Synthetic Organic Compounds (SOC's)**

EPA <u>Method</u>	<u>Contaminant</u>	Concen <u>ug/L</u>	Det <u>Limit</u>	EPA <u>Method</u>	<u>Contaminant</u>	Concen <u>ug/L</u>	Det <u>Limit</u>
Analyzed: 01/19/96				Analyzed: 02/05/96			
504	1. 1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	515.1	1. Dalapon	ND	1.00
504	2. 1,2-Dibromoethane(EDB)	ND	0.01	515.1	2. Dicamba	ND	1.00
				515.1	3. Dinoseb	ND	0.20
				515.1	4. 2,4-D	ND	0.10
				515.1	5. Pichloram	ND	0.10
Analyzed: 01/29/96				Analyzed: 01/22/96			
505	1. Alachlor	ND	0.20	525	1. Benzo(a)pyrene	ND	0.04
505	2. Aldrin	ND	0.20	525	2. Bis(2-ethylhexyl)phthalate	ND	0.20
505	3. Chlordane (Technical)	ND	0.20		3. Bis(2-ethylhexyl)adipate	ND	0.60
505	4. Dieldrin	ND	0.20	Analyzed: 01/23/96			
505	5. Endrin	ND	0.01	525	1. Aldicarb	ND	0.50
505	6. Heptachlor	ND	0.04	525	2. Aldicarb Sulfoxide	ND	0.50
505	7. Heptachlor Epoxide	ND	0.02	525	3. Aldicarb Sulfone	ND	0.80
505	8. Hexachlorobenzene	ND	0.10	525	4. Carbayl	ND	1.00
505	9. Hexachlorocyclopentadiene	ND	0.10	525	5. Carbofuran	ND	0.90
505	10. Lindane	ND	0.02	525	6. 3-Hydroxycarbofuran	ND	1.00
505	11. Methoxychlor	ND	0.10	525	7. Methomyl	ND	1.00
505	12. Aroclor-1016 (Screen)	ND	0.08	525	8. Oxamyl	ND	2.00
505	13. Aroclor-1221 (Screen)	ND	20.0	Analyzed: 01/24/96			
505	14. Aroclor-1232 (Screen)	ND	0.50	547	1. Glyphosate	ND	6.00
505	15. Aroclor-1242 (Screen)	ND	0.30	547	2. Endothall	ND	9.00
505	16. Aroclor-1248 (Screen)	ND	0.10	548	1. Diquat	ND	0.40
505	17. Aroclor-1254 (Screen)	ND	0.10	Analyzed: 02/05/96			
505	18. Aroclor-1260 (Screen)	ND	0.20				
505	19. Toxaphene	ND	1.00				
Analyzed: 01/23/96							
507	1. Atrazine	ND	0.10				
507	2. Butachlor	ND	1.00				
507	3. Metolachlor	ND	1.00	Analyzed: 01/22/96			
507	4. Metribuzin	ND	1.00	549	1. Endothall	ND	9.00
507	5. Propachlor	ND	1.00	549	2. Diquat	ND	0.40
507	6. Simazine	ND	0.07	Analyzed: 02/05/96			

ND - Not Detected

Approved By:

Roger L. Scholl, Ph.D  
Laboratory Director

Date: 2/8/96



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Jan-96

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 22-Jan-96 15:00  
Project: PO #: 1920

Job: 961100E Status: Final

## ANALYTICAL REPORT PACKAGE

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# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Jan-96

Page: i

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 22-Jan-96 15:00  
Project: PO #: 1920

Job: 961100E Status: Final

## CASE NARRATIVE

A total of 1 Water sample was received on 22-Jan-96. As stated in the chain of custody, the sample was run for the following analyses: Gross Alpha, Gross Beta and U. A table, to cross reference your sample ID to ours, is attached. Our procedures are summarized on the Quality Control Data Sheet.

Quality control standards for organic and inorganic analyses followed the appropriate SW-846 or EPA methodology. Quality control standards for radiochemistry followed our standard operating procedures or contractual requirements.

Signed:

Radiochemistry  
Manager

Signed:

Project Review

# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Jan-96

Page: ii

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 22-Jan-96 15:00  
Project: PO #: 1920

Job: 961100E Status: Final

Lab-ID	Matrix	Client Sample ID	Sampled
961100-1	Water	(9601-492) Naclia Court Well	18-Jan-96

# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

SIERRA ENVIRONMENTAL MONITORING, INC.

30-Jan-96

Page: R-1

Job: 961100E

Status: Final

Analyte: Gross Alpha  
Fraction: Total  
Method: 900.0  
Units: pCi/l

Project:

Date Analyzed: 01/22-01/29  
LLD: 2

Date

Lab Id	Sampled	Matrix	Sample Id	Concentration+ 2 $\sigma$	LLD
961100-1	18-Jan-96	Water	(9601-492)	Naclia Court Well	4.0±1.9

Analyte: Gross Beta  
Fraction: Total  
Method: 900.0  
Units: pCi/l

Project:

Date Analyzed: 01/22-01/29  
LLD: 4

Date

Lab Id	Sampled	Matrix	Sample Id	Concentration+ 2 $\sigma$	LLD
961100-1	18-Jan-96	Water	(9601-492)	Naclia Court Well	9.9±3.1

# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Jan-96

Page: R-2

Job: 961100E

Status: Final

## SIERRA ENVIRONMENTAL MONITORING, INC.

Analyte: Uranium

Project:

Fraction: Total

Date Analyzed: 01/24-01/25

Method: ASTM D2907

LLD: 0.0003

Units: mg/l

Date

Lab Id	Sampled	Matrix	Sample Id	Concentration	LLD
961100-1	18-Jan-96	Water	(9601-492)	Naclia Court Well 0.0035	0.0003



15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Jan-96

Page: Q-1

Job: 961100E

Status: Final

SIERRA ENVIRONMENTAL MONITORING, INC.

QUALITY CONTROL REPORT

Sample Id	Gross Alpha		Gross Beta	
	Total pCi/l	+ 2σ	Total pCi/l	+ 2σ
Duplicate	0.8	±0.9	6.5	±2.3
Duplicate	2.9	±1.3	2.8	±2.1
RER	1:27		1.09	
Std (found value)	89	±4	102	±2
Std (true value)	96		94	
Std % rec.	93		108	
Blank	1.5	±0.6	1.1	±0.6
Spike % rec.	97		107	



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SIERRA ENVIRONMENTAL MONITORING, INC.

30-Jan-96  
Page: Q-2  
Job: 961100E  
Status: Final

QUALITY CONTROL REPORT

Sample Id	Uranium Total mg/l
Duplicate	1.5
Duplicate	1.5
RPD	0.0
Std (found value)	1.5
Std (true value)	1.6
Std % rec.	95
Blank	U
Spike % rec.	100

# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Jan-96

Page: Q-3

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 22-Jan-96 15:00  
Project: PO #: 1920

Job: 961100E Status: Final

Abbreviations:

Units:

pCi/l : picoCuries per liter  
mg/l : milligrams per liter

Quality codes:

U : Undetected



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

30-Jan-96

Page: Q-4

Attn: Received: 22-Jan-96 15:00  
Project: PO #: 1920

Job: 961100E Status: Final

## QUALITY CONTROL DATA SHEET

Received by: rc Via: Delta

Sample Container Type: 11 pl  
Additional Lab Preparation: None

Parameter	Method	Preservative	Init	Analysis Dates
Gross Alpha	900.0	HNO3	EM	01/22-01/29
Gross Beta	900.0	HNO3	EM	01/22-01/29
U	ASTM D2907	HNO3	ME	01/24-01/25

Barringer Laboratories, Inc. will return or dispose of your samples 30 days from the date your final report is mailed, unless otherwise specified by contract. Barringer Laboratories, Inc. reserves the right to return samples prior to the 30 days if radioactive levels exceed our license.



RECEIVED  
FEB 23 1996

Laboratory  
Analysis Report

Sierra  
Environmental  
Monitoring, Inc.

CES, INC.

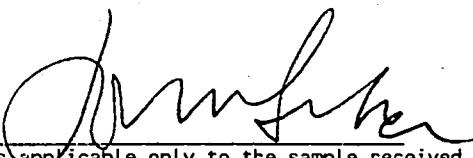
CES, INC.  
DALE BUGENIG  
1105 TERMINAL WAY, SUITE 304  
RENO NV 89502

Date : 2/22/96  
Client : CES-001  
Taken by: BUGENIG/DRAGAN  
Report : 15553  
PO# :

Page: 1

Sample	Collected Date Time	ALKALINITY MG/L CACO3	ALKALINITY TOTAL MG/L CACO3	PH S.U.	TURBIDITY NTU	COLOR APPARENT COLOR UNIT	TOTAL DISSOL. SOLIDS MG/L
ENTRY MEADOW WELL	2/08/96 12:45	102B	102	6.89	0.10	<5	166
Sample	Collected Date Time	NITRATE-N MG/L	NITRITE-N MG/L	ARSENIC AA HYDRIDE MG/L	BARIUM ICP MG/L	CALCIUM ICP MG/L	CHROMIUM ICP MG/L
ENTRY MEADOW WELL	2/08/96 12:45	0.1N	<0.02N	<0.005	0.09	19	< 0.02
Sample	Collected Date Time	COPPER, ICP MG/L	IRON, ICP MG/L	MAGNESIUM ICP MG/L	MANGANESE ICP MG/L	MERCURY AA COLD VAPOR MG/L	NICKEL ICP MG/L
ENTRY MEADOW WELL	2/08/96 12:45	< 0.02	0.02	12	< 0.01	<0.0005	< 0.04
Sample	Collected Date Time	POTASSIUM ICP MG/L	SELENIUM AA HYDRIDE MG/L	SODIUM ICP MG/L	ZINC ICP MG/L	LEAD AA FURNACE MG/L	CADMUM AA FURNACE MG/L
ENTRY MEADOW WELL	2/08/96 12:45	4.2	<0.001	12	0.04	<0.002	<0.0002
Sample	Collected Date Time	SILVER AA FURNACE MG/L	CHLORIDE MG/L	CYANIDE, TOTAL MG/L	FLUORIDE MG/L	SULFATE MG/L	MBAS SURFACTANTS MG/L
ENTRY MEADOW WELL	2/08/96 12:45	<0.0005	1.3	<0.005	<0.1	0.4	<0.05
Sample	Collected Date Time	THALLIUM AA FURNACE MG/L	BERYLLIUM AA FURNACE MG/L	ANTIMONY AA FURNACE MG/L	ORGANICS ANAL TO FOLLOW	RADIOLOGICAL TO FOLLOW	
ENTRY MEADOW WELL	2/08/96 12:45	<0.0005	<0.0002	<0.002	SEE REPORT	SEE REPORT	

Approved By:

  
This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

1135 Financial Blvd.

Reno, NV 89502

Phone (702) 857-2400

FAX (702) 857-2404

William F. Pillsbury  
President

John C. Seher  
Manager

# SIERRA ENVIRONMENTAL MONITORING, INC.

## CHAIN OF CUSTODY RECORD

1135 FINANCIAL BOULEVARD - RENO - NEVADA - 89502

TELEPHONE: (702) 857 - 2400 TELEFAX: (702) 857 - 2404



Client Name

*Consulting Services, Inc.*

PO #

Analyses Required

Special Conditions:

Address

112 - Terminal Way Suite 304

Phone/Fax #

776-5873  
-6138 FAX

Turnaround Time:

Standard

Special Handling:

City

Report Attention:

Other:

Remarks

State

Sampled by:

Sample Description

General Chem  
Metals, N

Zip

Dale Ruggles

Number of Containers

Sampled

Dan Dragon

26

Date Sampled

1/8/96

AQ

Type \*

Drinking Water

Entire Meadow Well

See Key Below

The Works

1/8/96

Signature

Dan Dragon

Date

Print Name

1/8/96

Time

Company

SOIL

Received By: *John Hauge*

Date

1/8/96

Time

Received By: *Dan Dragon*

1/8/96

Time

Received By: *S. C. M.*

1/8/96

Time

Received By: *Dale Ruggles*

1/8/96

Time

Received By: *Consulting Services, Inc.*

1/8/96

Time

Drinking Water Bacteria:

NOTE:

Samples are discarded 60 days after results are reported unless other arrangements are made.  
Hazardous samples will be returned to client or disposed of at client expense.

Compliance

Non Compliance

SEM  
COC  
Form  
Revised  
4/95

\* KEY: AQ - Aqueous

SO - Soil

OT - Other





RECEIVED

MAR 15 1996

CES, INC.

Laboratory  
Analysis Report

CES, INC.  
DALE BUGENIG  
1105 TERMINAL WAY, SUITE 304  
RENO NV 89502

Sierra  
Environmental  
Monitoring, Inc.

Date : 3/14/96  
Client : CES-001  
Taken by: BUGENIG/DRAGAN  
Report : 15552  
PO# :

Page: 1

Sample	Collected Date Time	GROSS ALPHA/ BETA	ORGANICS ANALYSES					
ENTRY MEADOW WELL	2/08/96 12:45	SEE REPORT	SEE REPORT					

Approved By:

  
This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

1135 Financial Blvd.

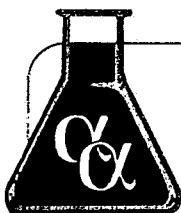
Reno, NV 89502

Phone (702) 857-2400

FAX (702) 857-2404

William F. Pillsbury  
President

John C. Seher  
Manager



# Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21  
 Sparks, Nevada 89431  
 (702) 355-1044  
 FAX: 702-355-0406  
 1-800-283-1183

Boise, Idaho  
 (208) 336-4145

Las Vegas, Nevada  
 (702) 386-6747

## ANALYTICAL REPORT

Sierra Environmental Monitoring, Inc.  
 1135 Financial Boulevard  
 Reno, NV 89502

Job #: 1952  
 Phone: (702) 857-2400  
 Attn: John C. Seher

Sampled: 02/08/96 Received: 02/08/96 Analyzed: 02/14/96

Alpha Analytical Number: SEM020896-01  
 Client I.D.: Entry Meadow Well (9602-131)

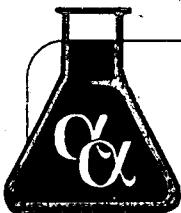
**Report of GC/MS Analysis for  
 SDWA VOLATILES PLUS LISTS 1 AND 3  
 UNREGULATED COMPOUNDS  
 EPA 524.2**

Compound	Concentration ug/L	Detection Limit	Compound	Concentration ug/L	Detection Limit
<b>8 Regulated Volatile Organic Compounds (VOC's)          (Phase I)</b>					
1. Benzene	ND	0.50 ug/L	26. Chlorodibromomethane	ND	0.50 ug/L
2. Vinyl Chloride	ND	0.50 ug/L	27. Chloroethane	ND	0.50 ug/L
3. Carbon tetrachloride	ND	0.50 ug/L	28. Chloroform	ND	0.50 ug/L
4. 1,2-Dichloroethylene	ND	0.50 ug/L	29. Chloromethane	ND	0.50 ug/L
5. Trichloroethylene	ND	0.50 ug/L	30. o-Chlorotoluene	ND	0.50 ug/L
6. p-Dichlorobenzene	ND	0.50 ug/L	31. p-Chlorotoluene	ND	0.50 ug/L
7. 1,1-Dichloroethylene	ND	0.50 ug/L	32. Dibromomethane	ND	0.50 ug/L
8. 1,1,1-Trichloroethane	ND	0.50 ug/L	33. m-Dichlorobenzene	ND	0.50 ug/L
<b>10 Regulated Volatile Organic Compounds (VOC's)          (Phase II)</b>					
9. cis-1,2-Dichloroethylene	ND	0.50 ug/L	34. 1,1-Dichloroethane	ND	0.50 ug/L
10. 1,2-Dichloropropane	ND	0.50 ug/L	35. 1,1-Dichloropropene	ND	0.50 ug/L
11. Ethylbenzene	ND	0.50 ug/L	36. 1,3-Dichloropropane	ND	0.50 ug/L
12. Monochlorobenzene	ND	0.50 ug/L	37. e,z-1,3-Dichloropropene	ND	0.50 ug/L
13. o-Dichlorobenzene	ND	0.50 ug/L	38. 2,2-Dichloropropane	ND	0.50 ug/L
14. Styrene	ND	0.50 ug/L	39. 1,1,1,2-Tetrachloroethane	ND	0.50 ug/L
15. Tetrachloroethylene	ND	0.50 ug/L	40. 1,1,2,2-Tetrachloroethane	ND	0.50 ug/L
16. Toluene	ND	0.50 ug/L	41. 1,2,3-Trichloropropane	ND	0.50 ug/L
17. trans-1,2-Dichloroethylene	ND	0.50 ug/L	List 3 - Monitoring Required at State Discretion		
18. Xylenes (total)	ND	0.50 ug/L	42. Bromochloromethane	ND	0.50 ug/L
<b>3 Regulated Volatile Organic Compounds (VOC's)          (Phase V)</b>			43. n-Butylbenzene	ND	0.50 ug/L
19. Dichloromethane	ND	0.50 ug/L	44. Dichlorodifluoromethane	ND	0.50 ug/L
20. 1,1,2-Trichloroethane	ND	0.50 ug/L	45. Fluorotrichloromethane	ND	0.50 ug/L
21. 1,2,4-Trichlorobenzene	ND	0.50 ug/L	46. Hexachlorobutadiene	ND	0.50 ug/L
<b>List 1 - Unregulated Compounds - All Systems</b>			47. Isopropylbenzene	ND	0.50 ug/L
22. Bromobenzene	ND	0.50 ug/L	48. p-Isopropyltoluene	ND	0.50 ug/L
23. Bromodichloromethane	ND	0.50 ug/L	49. Naphthalene	ND	0.50 ug/L
24. Bromoform	ND	0.50 ug/L	50. n-Propylbenzene	ND	0.50 ug/L
25. Bromomethane	ND	0.50 ug/L	51. sec-Butylbenzene	ND	0.50 ug/L

ND - Not Detected

Approved By:

*Roger L. Scholl* Date: 3/11/96  
 Roger L. Scholl, Ph.D.  
 Laboratory Director



# Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21  
 Sparks, Nevada 89431  
 • 702-355-1044  
 FAX: 702-355-0406  
 1-800-283-1183

Boise, Idaho  
 (208) 336-4145

Las Vegas, Nevada  
 (702) 386-6747

## ANALYTICAL REPORT

Sierra Environmental Monitoring, Inc.  
 1135 Financial Boulevard  
 Reno, NV 89502  
Attn: John C. Seher

Client ID: 1952 - Entry Meadow Well (9602-131)  
 Lab ID: SEM020896-01  
 Sampled: 02/08/96  
 Received: 02/08/96

### National Primary Drinking Water Phase II and Phase V Regulated and Unregulated Synthetic Organic Compounds (SOC's)

EPA Method	Contaminant	Concen ug/L	Det Limit	EPA Method	Contaminant	Concen ug/L	Det Limit
<u>Analyzed: 02/27/96</u>							
504	1. 1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	515.1	1. Dalapon	ND	1.00
504	2. 1,2-Dibromoethane(EDB)	ND	0.01	515.1	2. Dicamba	ND	1.00
				515.1	3. Dinoseb	ND	0.20
				515.1	4. 2,4-D	ND	0.10
				515.1	5. Pichloram	ND	0.10
<u>Analyzed: 02/10/96</u>							
505	1. Alachlor	ND	0.20	515.1	6. Pentachlorophenol	ND	0.04
505	2. Aldrin	ND	0.20	515.1	7. 2,4,5-TP (Silvex)	ND	0.20
505	3. Chlordane (Technical)	ND	0.20				
505	4. Dieldrin	ND	0.20	<u>Analyzed: 02/14/96</u>			
505	5. Endrin	ND	0.01	525	1. Benzo(a)pyrene	ND	0.02
505	6. Heptachlor	ND	0.04	525	2. Bis(2-ethylhexyl)phthalate	ND	0.60
505	7. Heptachlor Epoxide	ND	0.02				
505	8. Hexachlorobenzene	ND	0.10	525	3. Bis(2-ethylhexyl)adipate	ND	0.60
505	9. Hexachlorocyclopentadiene	ND	0.10				
505	10. Lindane	ND	0.02				
505	11. Methoxychlor	ND	0.10	<u>Analyzed: 02/28/96</u>			
505	12. Aroclor-1016 (Screen)	ND	0.08	531.1	1. Aldicarb	ND	0.50
505	13. Aroclor-1221 (Screen)	ND	20.0	531.1	2. Aldicarb Sulfoxide	ND	0.50
505	14. Aroclor-1232 (Screen)	ND	0.50	531.1	3. Aldicarb Sulfone	ND	0.80
505	15. Aroclor-1242 (Screen)	ND	0.30	531.1	4. Carbaryl	ND	1.00
505	16. Aroclor-1248 (Screen)	ND	0.10	531.1	5. Carbofuran	ND	0.90
505	17. Aroclor-1254 (Screen)	ND	0.10	531.1	6. 3-Hydroxycarbofuran	ND	1.00
505	18. Aroclor-1260 (Screen)	ND	0.20	531.1	7. Methomyl	ND	1.00
505	19. Toxaphene	ND	1.00	531.1	8. Oxamyl	ND	2.00
<u>Analyzed: 02/17/96</u>							
507	1. Atrazine	ND	0.10	547	1. Glyphosate	ND	6.00
507	2. Butachlor	ND	1.00				
507	3. Metolachlor	ND	1.00	<u>Analyzed: 02/20/96</u>			
507	4. Metribuzin	ND	1.00	548	1. Endothall	ND	9.00
507	5. Propachlor	ND	1.00				
507	6. Simazine	ND	0.07	<u>Analyzed: 03/06/96</u>			
				549	1. Diquat	ND	0.40

ND - Not Detected

Approved By:

Roger L. Scholl, Ph.D.  
 Laboratory Director

Date:

3/11/96



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

1-Mar-96

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 9-Feb-96 10:30  
Project: PO #: 1949

Job: 961218E Status: Final

## ANALYTICAL REPORT PACKAGE

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QUALITY CONTROL REPORT.....	Q-1



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

1-Mar-96

Page: i

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 9-Feb-96 10:30  
Project: PO #: 1949

Job: 961218E Status: Final

## CASE NARRATIVE

A total of 1 Water sample was received on 9-Feb-96. As stated in the chain of custody, the sample was run for the following analyses: Gross Alpha and Gross Beta. A table, to cross reference your sample ID to ours, is attached. Our procedures are summarized on the Quality Control Data Sheet.

Quality control standards for organic and inorganic analyses followed the appropriate SW-846 or EPA methodology. Quality control standards for radiochemistry followed our standard operating procedures or contractual requirements.

Signed:

J.M. Hart

Radiochemistry  
Manager

Signed:

C.E. Zott Jr.

Project Review



15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

1-Mar-96

Page: ii

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 9-Feb-96 10:30  
Project: PO #: 1949

Job: 961218E Status: Final

Lab-ID	Matrix	Client Sample ID	Sampled
961218-1	Water	(9602-131) Entry Meadow Well	8-Feb-96



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

1-Mar-96

Page: R-1

Job: 961218E

Status: Final

## SIERRA ENVIRONMENTAL MONITORING, INC.

Analyte: Gross Alpha  
Fraction: Total  
Method: 900.0  
Units: pCi/l

Project:  
Date Analyzed: 02/23-02/26  
LLD: 2

Lab Id	Sampled	Matrix	Sample Id	Concentration+ 2 $\sigma$	LLD
961218-1	8-Feb-96	Water	(9602-131) Entry Meadow Well	1.4±1.4	2

Analyte: Gross Beta  
Fraction: Total  
Method: 900.0  
Units: pCi/l

Project:  
Date Analyzed: 02/23-02/26  
LLD: 3

Lab Id	Sampled	Matrix	Sample Id	Concentration+ 2 $\sigma$	LLD
961218-1	8-Feb-96	Water	(9602-131) Entry Meadow Well	4.4±2.2	3



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

1-Mar-96

Page: Q-1

Job: 961218E

Status: Final

## SIERRA ENVIRONMENTAL MONITORING, INC.

### QUALITY CONTROL REPORT

Sample Id	Gross Alpha		Gross Beta	
	Total pCi/l	+ 2σ	Total pCi/l	+ 2σ
Duplicate	8.9	±5.6	7.8	±7.3
Duplicate	15	±7	5.1	±6.5
RER	0.62		0.27	
Std (found value)	101	±4	111	±2
Std (true value)	101		94	
Std % rec.	100		118	
Blank	0.8	±0.5	0.9	±0.5
Spike % rec.	103		109	



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

1-Mar-96

Page: Q-2

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 9-Feb-96 10:30  
Project: PO #: 1949

Job: 961218E Status: Final

Abbreviations:

Units: pCi/l : picocuries per liter

# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

1-Mar-96

Page: Q-3

John Seher  
SIERRA ENVIRONMENTAL MONITORING, INC.  
1135 Financial Boulevard  
Reno, NV 89502

Attn: Received: 9-Feb-96 10:30  
Project: PO #: 1949

Job: 961218E Status: Final

## QUALITY CONTROL DATA SHEET

Received by: cs Via: UPS

Sample Container Type: 250ml amber, 1l pl

Additional Lab Preparation: None

Parameter	Method	Preservative	Init	Analysis Dates
Gross Alpha	900.0	HNO3	EM	02/23-02/26
Gross Beta	900.0	HNO3	EM	02/23-02/26

Barringer Laboratories, Inc. will return or dispose of your samples 30 days from the date your final report is mailed, unless otherwise specified by contract. Barringer Laboratories, Inc. reserves the right to return samples prior to the 30 days if radioactive levels exceed our license.

# GEO-HYDRO-DATA

INCORPORATED

## CALIPER-GAMMA LOG

COMPANY : ST. JAMES  
WELL : JOY LAKE  
LOCATION/FIELD : JOY LAKE AND NADIA COURT  
COUNTY : WASHOE  
STATE : NEVADA  
SECTION : N/A

OTHER SERVICES:  
INVOICE  
9829  
788-B

DATE : 11/18/95  
DEPTH DRILLER : 788 FEET  
LOG BOTTOM : 788.98  
LOG TOP : 8.98  
CASING DRILLER : -  
CASING TYPE : -  
CASING THICKNESS : -

BIT SIZE : 12.250  
MAGNETIC DECL. : -  
NATRUM DENSITY : -  
FLUID DENSITY : -  
NEUTRON DENSITY : N/A  
REMARKS :  
DRILL-SARGENT IRRIGATION, RENO, NV.  
CONS-CES, RENO, NV.

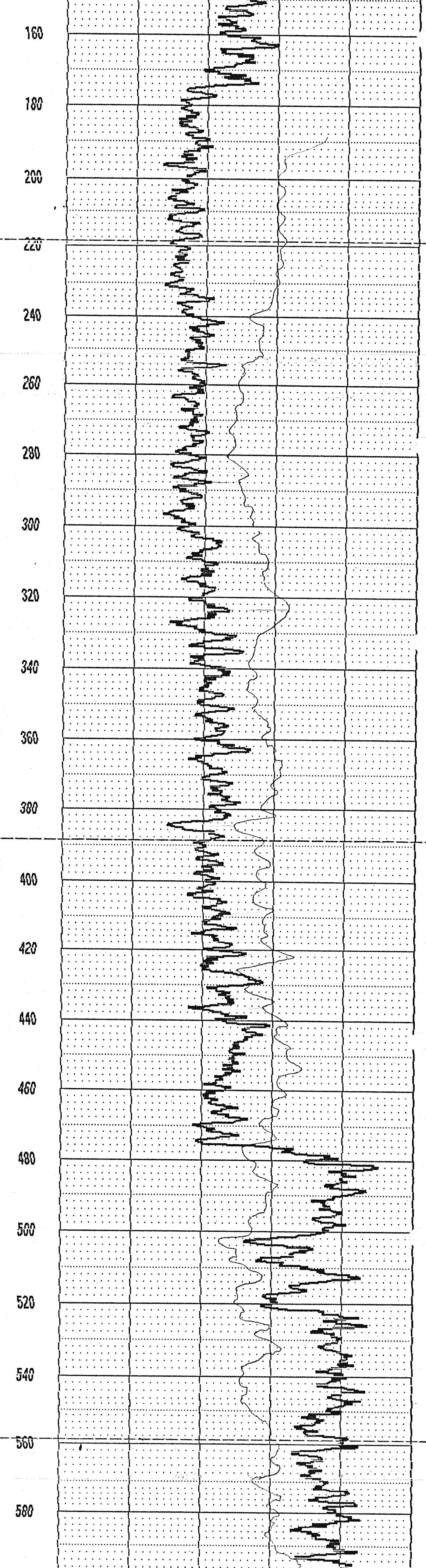
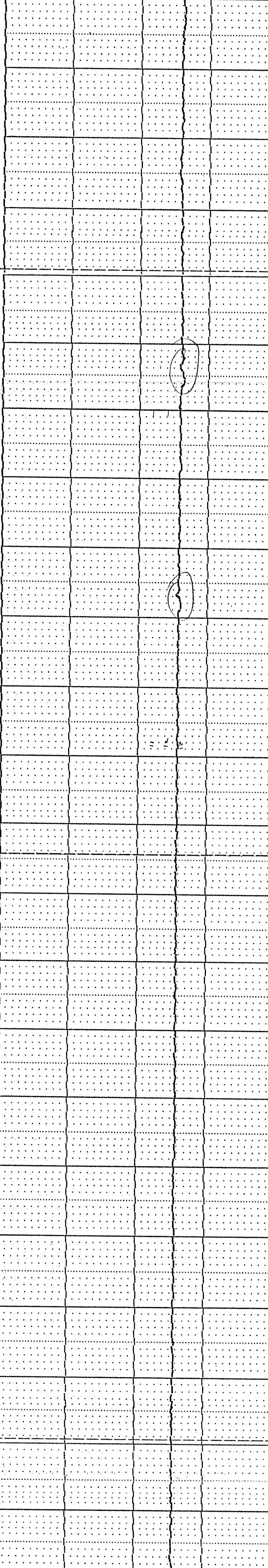
JONNSHIP : N/A  
PENIMENT DATUM : G.L.  
ELEV. PENM. DATUM: N/A  
LOG MEASURED FROM: G.L.  
DRL MEASURED FROM: G.L.

LOGGING UNIT : 10  
FIELD OFFICE : CLEMENTS.CAL  
RECORDED BY : D.SHANKLETER

BOREHOLE FLUID : CLAY/GEL  
RM : -  
BW TEMPERATURE : -  
NATRUM DELTA T : -  
FLUID DELTA T : -

RANGE : N/A  
ELEVATIONS  
MB : N/A  
DF : N/A  
GL : N/A

FILE : PROCESSED  
TYPE : 9841A  
LOG : 3  
PLOT : GND 37  
THRESH: 2000



# GEO-HYDRO-DATA

INCORPORATED

## ELECTRIC WELL LOG

COMPANY : ST. JAMES  
WELL : JOY LAKE  
LOCATION/FIELD : JOY LAKE AND MADA COURT  
COUNTY : WASHOE  
STATE : NEVADA  
SECTION : N/A

OTHER SERVICES:  
INVOICE  
9629  
760-B

DATE : 11/10/95  
DEPTH DRILLER : 700 FEET  
LOG BOTTOM : 700.00  
LOG TOP : 0.00

TOWNSHIP : N/A

RANGE : N/A

CASING DRILLER : -  
CASING TYPE : -  
CASING THICKNESS : -  
  
BIT SIZE : 12.250  
MAGNETIC DECL. : -  
MATRIX DENSITY : -  
FLUID DENSITY : -  
NEUTRON MATRIX : N/A  
REMARKS : -  
  
DRILL-SARGENT IRRIGATION, RENO, NV.  
SUNS-YES, RENO, NV.

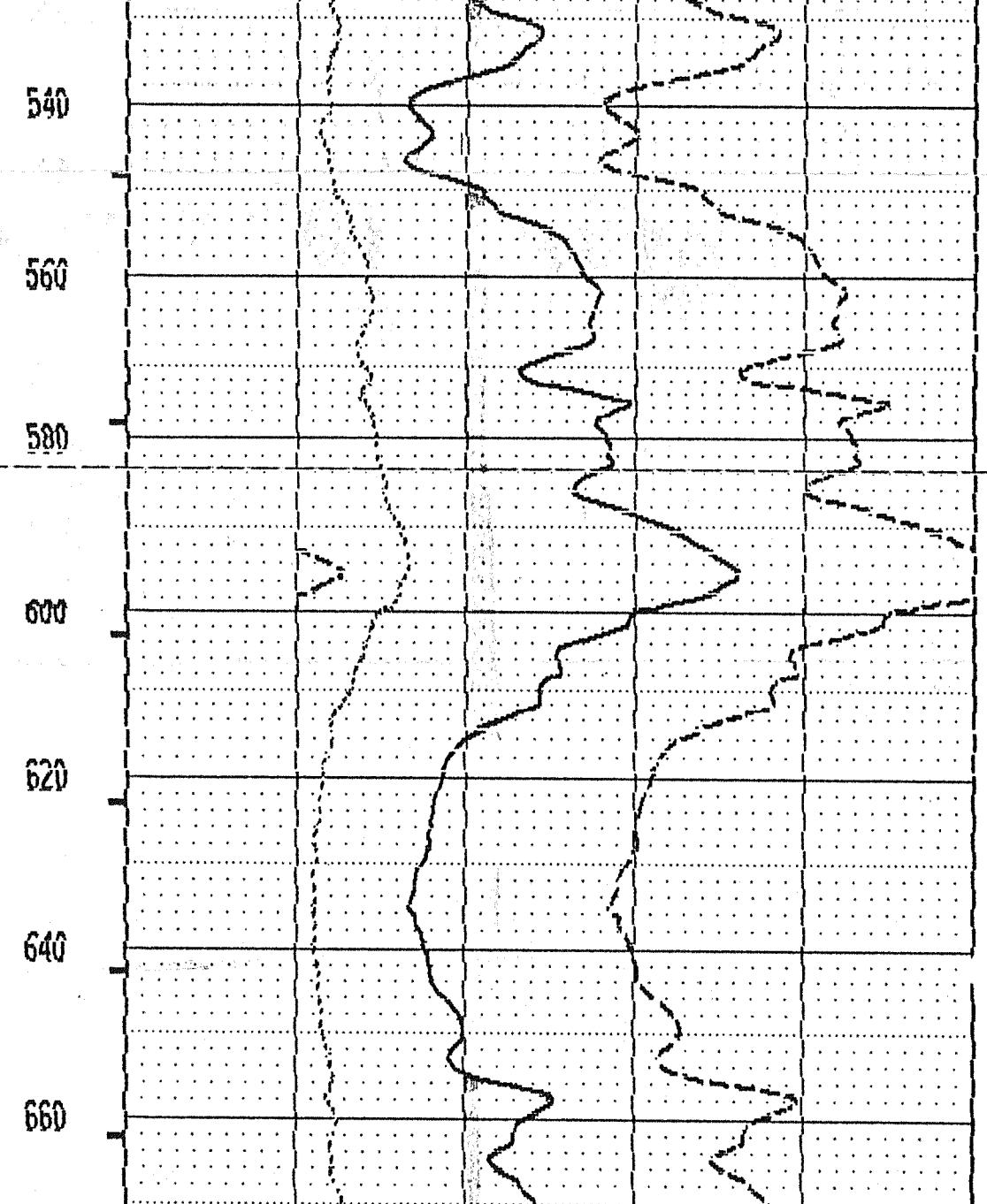
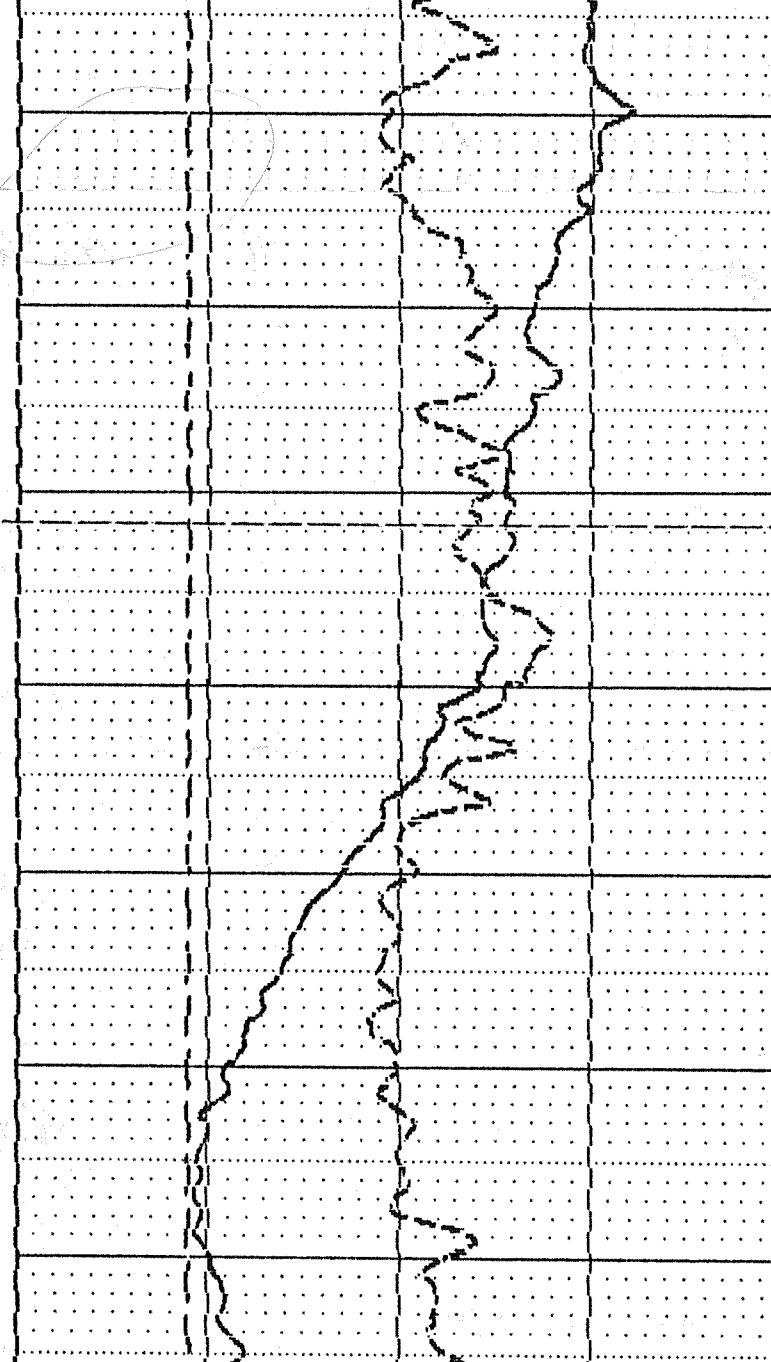
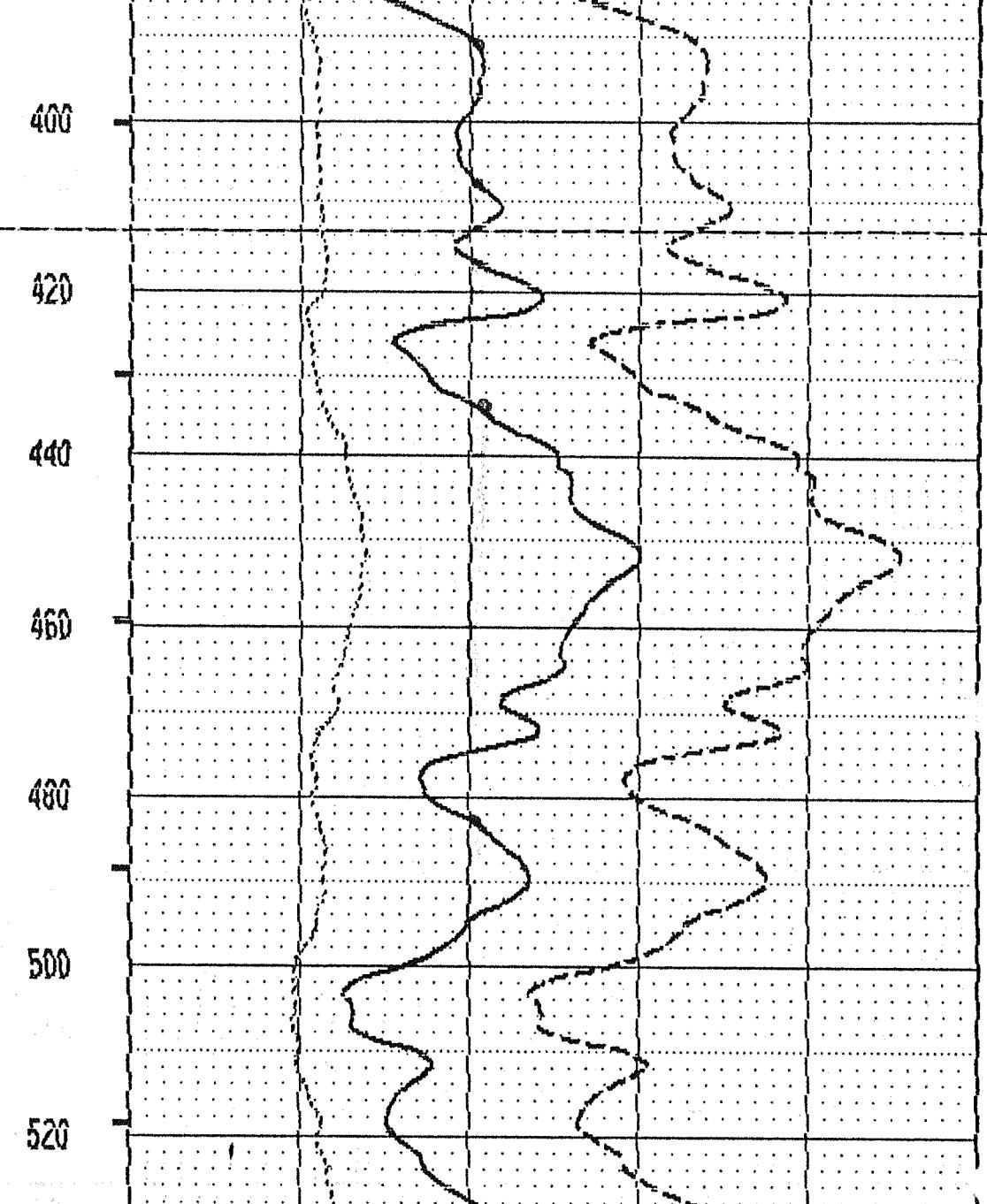
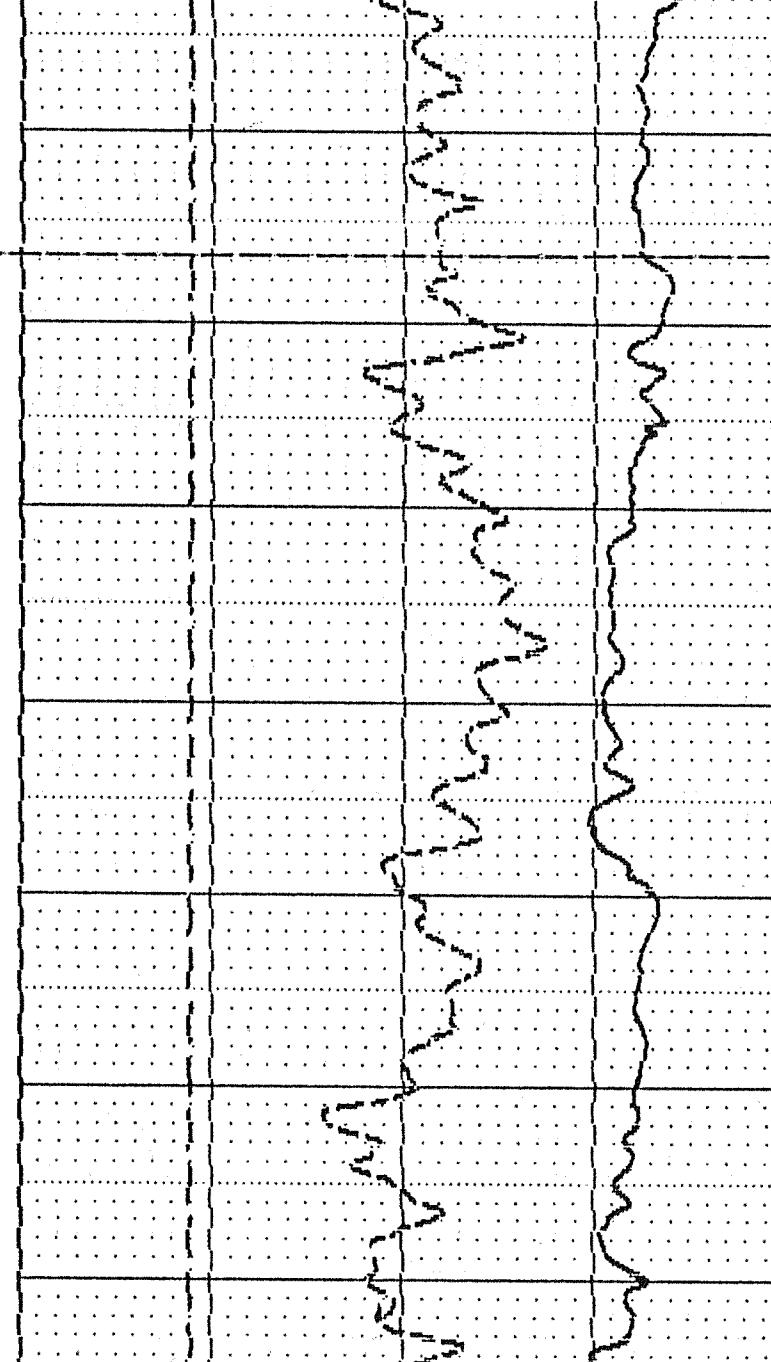
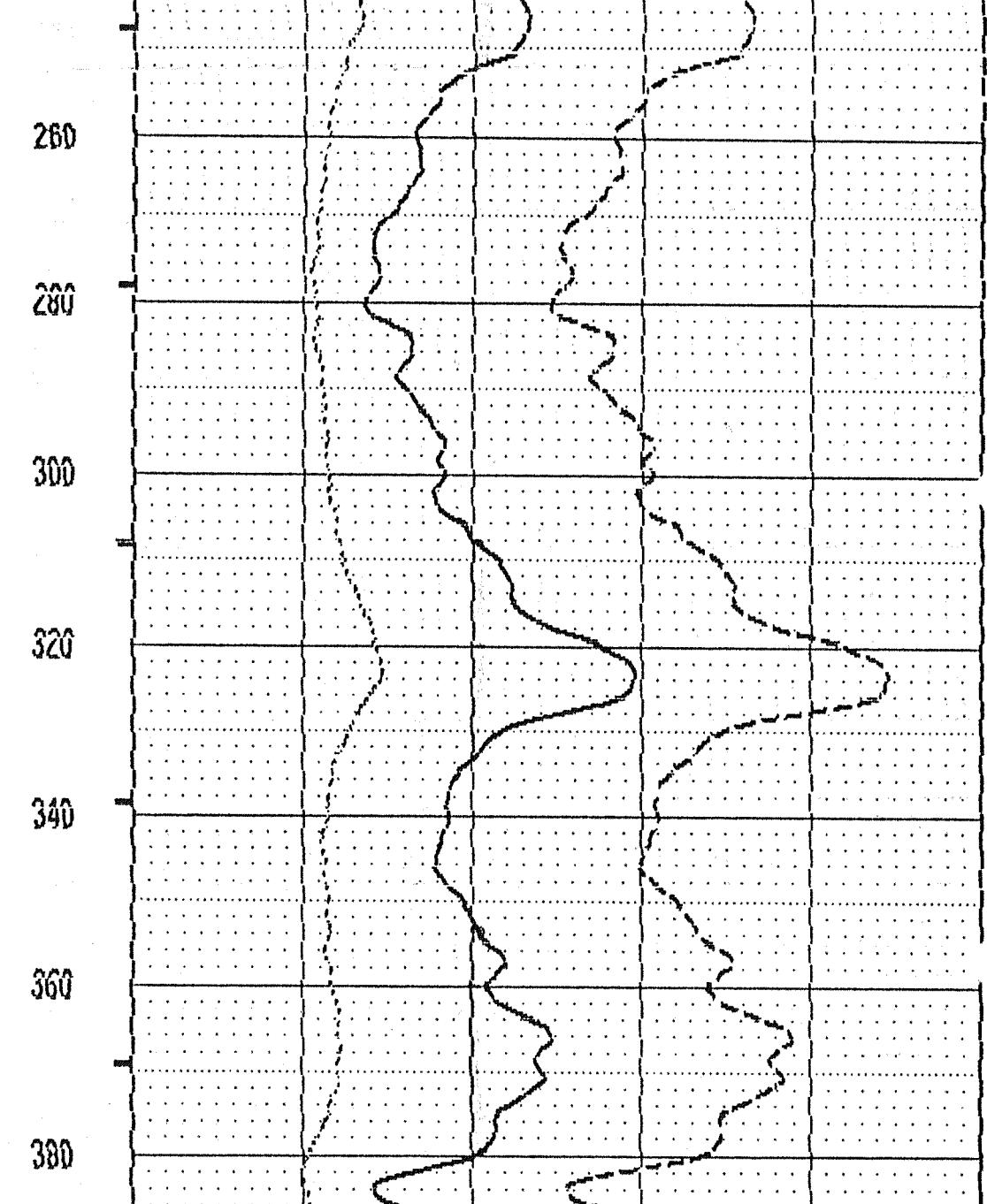
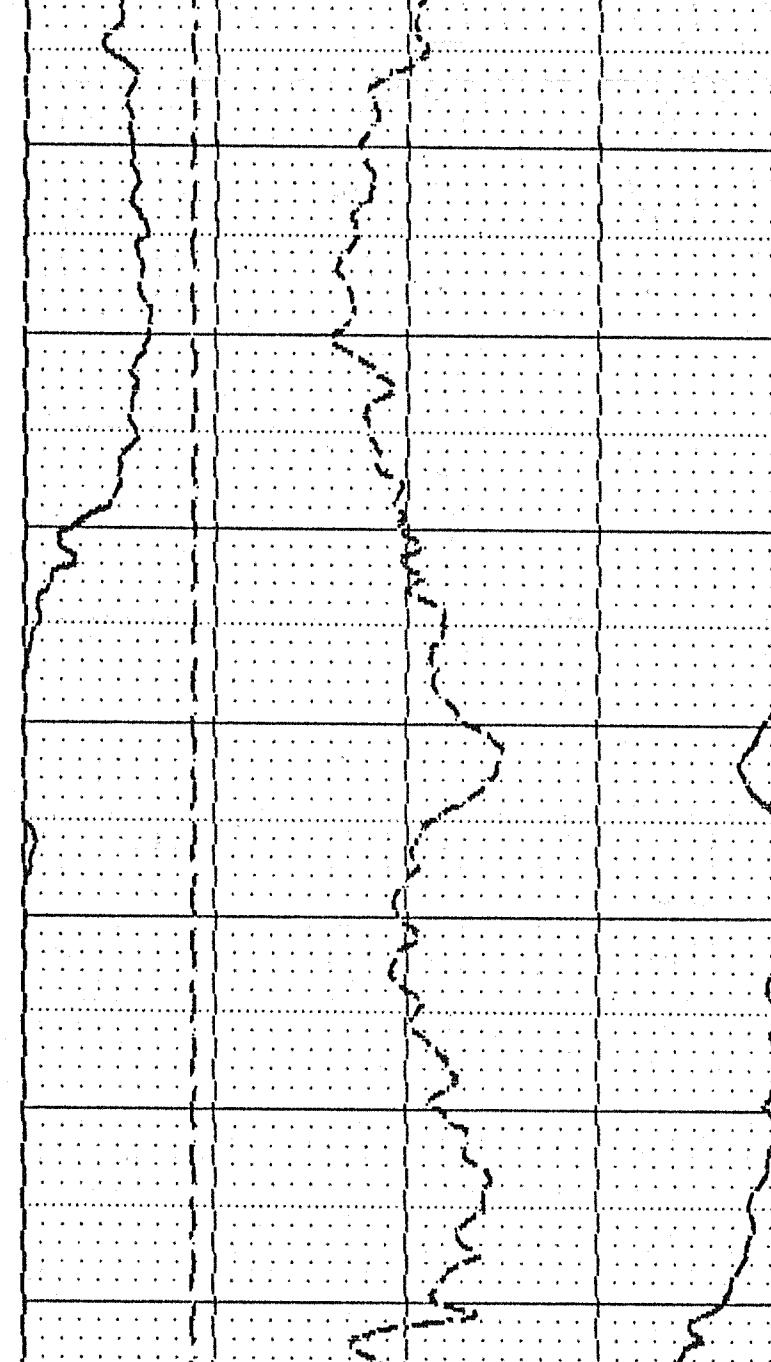
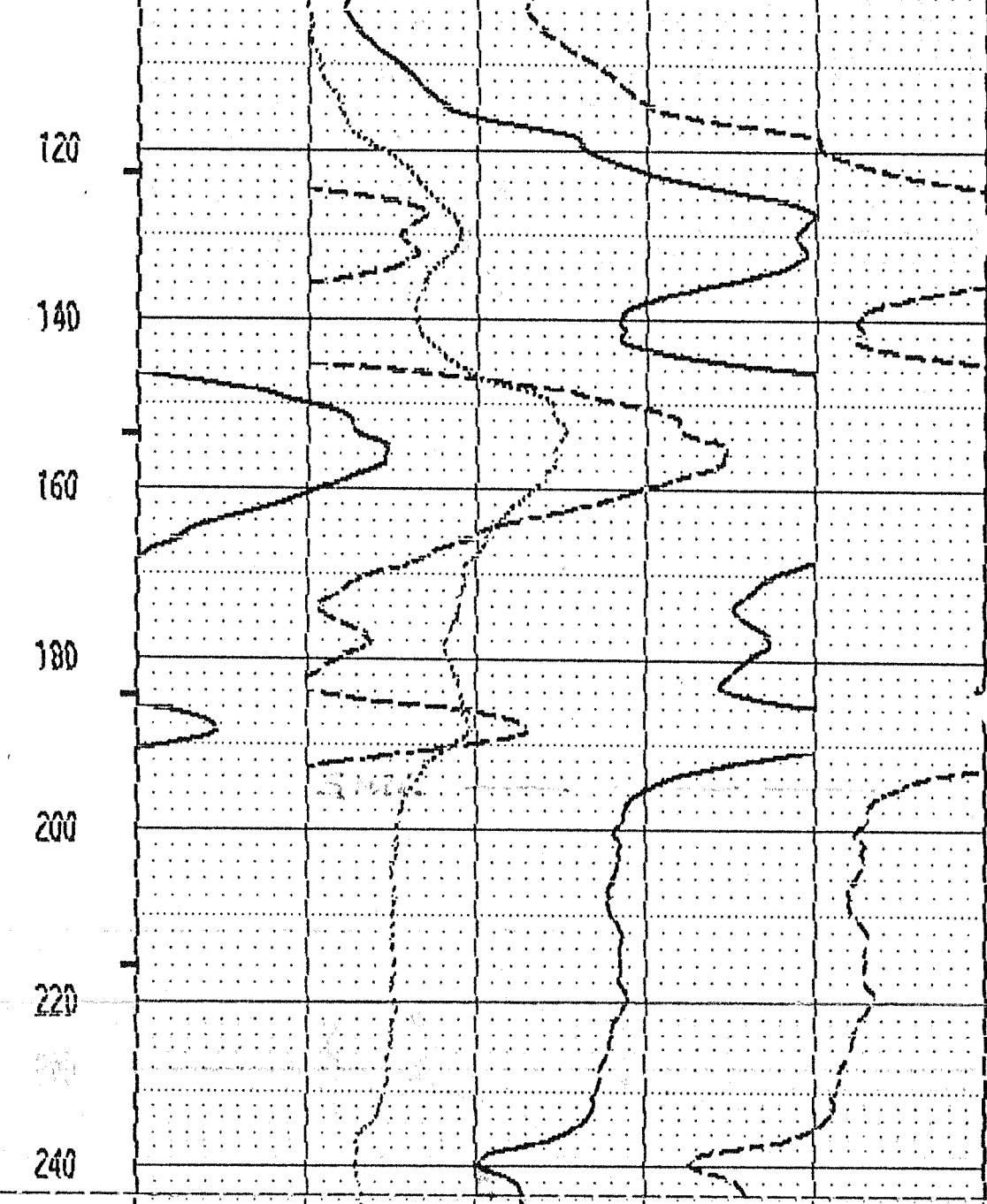
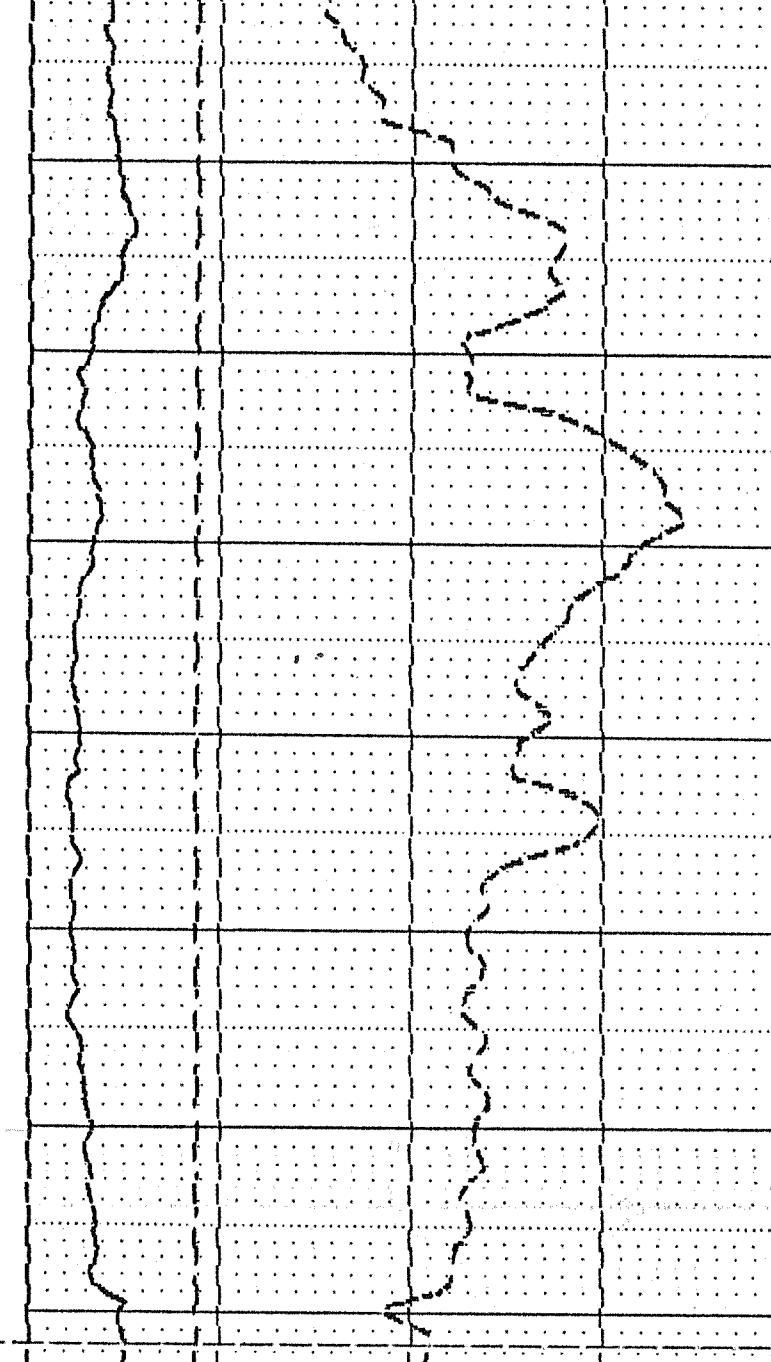
PERMANENT DATUM : G.L.  
ELEV. PERM. DATUM: N/A  
LOG MEASURED FROM: G.L.  
DRL MEASURED FROM: G.L.

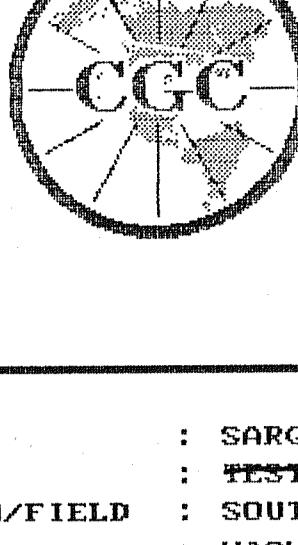
ELEVATIONS  
RB : N/A  
DF : N/A  
GL : N/A

LOGGING UNIT : 10  
FIELD OFFICE : ELEMENTS, ORL  
RECORDED BY : D. SHANNOLTER

BOREHOLE FLUID : CLAY/GEL  
RM : -  
RM TEMPERATURE : -  
MATRIX DELTA T : -  
FLUID DELTA T : -

FILE : ORIGINAL  
TYPE : 9641A  
LOG : B  
PLOT : GHD 10  
THRESH: 2000





# Century GEOPHYSICAL CORP.

ENTRY MEADOW

TEST # 2

COMPANY : SARGENT DRILLING  
WELL : TEST # 2 ENTRY MEADOW  
LOCATION/FIELD : SOUTH OF MT. ROSE  
COUNTY : WASHOE  
STATE : NEVADA  
SECTION :

OTHER SERVICES:

TOWNSHIP :  
RANGE :  
DATE : 12/06/95 PERMANENT DATUM : ELEVATIONS  
DEPTH DRILLER : 606 ELEV. PERM. DATUM : KB :  
LOG BOTTOM : 605.40 LOG MEASURED FROM: G.L. DF :  
LOG TOP : -3.80 DRL MEASURED FROM: G.L. GL :  
CASING DRILLER : 0 LOGGING UNIT : 9303  
Casing Type : NONE FIELD OFFICE : ELKO  
Casing Thickness : 0 RECORDED BY : THORSEN  
BIT SIZE : 12.25 BOREHOLE FLUID : AIR FILE : PROCESSE  
MAGNETIC DECL. : 15.5 RM : TYPE : 9055A  
MATRIX DENSITY : RM TEMPERATURE : LOG : 7  
FLUID DENSITY : 0 MATRIX DELTA T : PLOT : THOR 3  
NEUTRON MATRIX : FLUID DELTA T : THRESH: 500000  
REMARKS :

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

