1506-00017

CONSTRUCTION AND TESTING SUMMARY

PICOLLO MUNICIPAL WELL

MAY 1991

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS

UTILITY DIVISION

P.O. BOX 11130 RENO, NEVADA 89520

CONSTRUCTION AND TESTING SUMMARY

PICOLLO MUNICIPAL WELL

MAY 1991

Prepared by:
WASHOE COUNTY UTILITY DIVISION
1195-B CORPORATE BLVD.
P.O. BOX 11130
RENO, NEVADA 89520

CONTENTS

TABLES

FIGURES

Q	SPECIFIC DRAWDOWN ft/gpm
220	0.296
300	0.321
380	0.332
440	0.343

SUMMARY AND RECOMMENDATIONS

The Picollo Municipal Well is constructed of 12 inch diameter casing to a total depth of 360 feet. The screened interval consists of wire wrapped well screen from 130 to 230 feet and 250 to 350 feet. A 20 foot section of blank casing exists from 230 to 250 feet. A 10 foot blank sump pipe was installed from 350 to 360 feet. A static water level of 58.68 feet was measured after completion of well development.

A step drawdown test and constant discharge test were conducted on the Picollo Municipal Well. After completion of the final step at 513 gpm, the well had an efficiency of 86%. The constant discharge test ran for 72 continuous hours at a pumping rate of 427 gpm. A drawdown of 70.42 feet with a pumping level of 127.33 feet was measured at the end of the test.

The well had a specific capacity of 6.06 gpm/ft after 72 hours of pumping. A recharge boundary was observed 250 minutes after start of constant discharge testing. Water quality analyses show that well water constituents meet State of Nevada primary and secondary drinking water standards.

Recommended long term pumping rate for the Picollo Municipal Well is 300 gpm. The recommended pump intake setting is 240 feet. A pumping level of 106 feet is projected after 48 hours of continuous pumping at 300 gpm.

INTRODUCTION

During May of 1990, Washoe County Utility Division drilled an exploratory well on Marvin Picollo School property. The drilling was done to verify the resource potential of the site for an additional municipal well in the South Truckee Meadows General Improvement District (STMGID). The exploratory hole was completed as a 2 inch observation well.

A municipal well was constructed in the northwest corner of the school property where Caribou Lane intersects Foothill Road. The well is designated as a future water source to be incorporated into the existing STMGID well field. The locations of the Picollo Municipal Well and surrounding observation wells are shown in Figure 1.

The construction of the Picollo Municipal well was disturbing to surrounding homeowners. Questions concerning local long term effects from pumping the county well were voiced in several public meetings. Potential impacts on nearby domestic wells were to be estimated by private consultants retained by Washoe County. William E. Nork, Inc. and Hydro-Search, Inc. were the consultants hired.

Design, construction supervision, data collection and analyses were conducted by Washoe County Utility Division hydrogeologists. Construction and testing of the Picollo Municipal Well was done by Lang Exploratory Drilling Company of Salt Lake City, Utah. The well was constructed in November 1990. Pumping tests were conducted in January 1991.

LOCATION MAP

FIGURE 1

BOREHOLE DRILLING AND LITHOLOGY
PICOLLO OBSERVATION WELL

BOREHOLE DRILLING

The Picollo Observation Well was drilled from 0 to 400 feet with a 7-7/8 inch Tri-Cone Roller milltooth bit. The well was drilled using the direct rotary mud method. Drilling operations were accomplished with a top head drive rotary rig. Humboldt Drilling and Pump Company, Inc. of Winnemucca, Nevada constructed the observation well.

The drilling fluid used while drilling the observation well, consisted of high yield bentonite clay. Separation of borehole cuttings from the drilling fluid was done using a U-shaped settling pit.

LITHOLOGY

The lithology consisted of poorly sorted small gravel and coarse sand with silty clay stringers from 0 to 160 feet. A sandy clay with sand lenses runs from 160 to 372 feet. A red/gray alteration clay is found from 372 to 400 feet. Minor fluid loss was observed at 315 feet. Table 1 is the geologist's log of the borehole.

Electric logging was the only type of borehole geophysics performed on the observation Well. Apparent resistivity was measured using short and long normal electrodes along with a single point resistance device. A spontaneous potential curve was included in the logging. The well logging was performed by Welenco of Bakersfield, California. Figure 2 is the electric log of the observation well.

Sieve analysis were conducted on borehole samples taken from the following intervals: 180 to 190 ft., 220 to 230 ft., 260 to 270 ft., 300 to 310 ft. and 340 to 350 feet. A screen slot size of 0.090 inch and filter pack of 5/16" x 1/16" were recommended in the analysis. Roscoe Moss Company of Los Angeles, California performed the sieve analysis. A grain-size distribution curve is shown in Figure 3.

TABLE 1

PICOLLO OBSERVATION WELL

GEOLOGIST'S LOG

DEPTH	SAMPLE DESCRIPTION
0 - 20 Ft.	Poorly Sorted Coarse Gravel, Sand, Cobbles and Boulders
20 - 43 Ft.	Poorly Sorted Gravel and Sand
43 - 74 Ft.	Sand and Gravel with Brown Sandy Clay
74 - 90 Ft.	Medium to Coarse Sand and Gravel with Sticky Brown Clay Lenses
90 - 133 Ft.	Medium to Coarse Volcanic Sand
133 - 160 Ft.	Red and Gray Volcanic Sand and Gravel
160 - 222 Ft.	Volcanic Sand with Gray and Brown/Gray Sandy Clay Lenses
222 - 232 Ft.	Volcanic Sand and Gravel
232 - 372 Ft.	Brown Sandy Clay with Medium Grained Sand
372 - 400 Ft.	Red and Brown Volcanic Rich Sand with Red/Gray Clay

welenco

ELECTRIC LOG

FILING NO

COMPANY WASHOE COUNTY

WELL MARVIN PICCOLO TEST WELL

FIELD SOUTH TRUCKEE HEADOWS

STATE NEVADA COUNTY WASHOE

LOCATION: SE CORNER OF FOOTHILL RD AND CARIBOU RD. SW¼,NW¼,NE¼

SEC 18 TWP 18N RGE 20E

OTHER SERVICES: NONE

Permanent Datum: G.L. Elev. Elev.: K.B.

Log Measured From: G.L. Ft. Above Perm. Datum D.F.

Drilling Measured From: G.L. G.L.

Date	5-31-90			
Run No.	ONE			
Depth—Driller	405'			
Depth—Logger	404'			
Btm. Log Inter.	403'			
Top Log Inter.	33'			
Casing—Driller	NONE @	@	@	@
Casing—Logger	--			
Bit Size	7 7/8"			
Type Fluid in Hole	BENTONITE			
Dens. / Visc.	N/A			
pH / Fluid Loss	N/A ml	ml	ml	ml
Source of Sample	CIRC.			
Rm @ Meas. Temp.	24.7 @ 75 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	24.7 @ 75 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	N/A @ °F	@ °F	@ °F	@ °F
Source: Rmf Rmc	M			
Rm @ BHT	N/A @ °F	@ °F	@ °F	@ °F
Time Since Circ.	1 HOUR			
Max. Rec. Temp.	N/A °F	°F	°F	°F
Equip. Location	5878 / RENO			
Recorded By	ROBERTI			
Witnessed By	ED EVANS			

Field Hrs

REMARKS

Charges to Mud Type or Additional Samples

Depth—Driller

Type Fluid in Hole

Dens. / Visc.

pH / Fluid Loss ml

Source of Sample

Rm @ Meas. Temp.

Rmf @ Meas. Temp.

Rmc @ Meas. Temp.

Source: Rmf / Rmc

Rm @ BHT

Rmf @ BHT

Rmc @ BHT

Base Down Hole

Depth

Base Up Hole

Type Log

Run No. | Tool Type | Tool Position | Other

ONE | ELECTRIC LOG | FREE

Equipment Data

RESISTIVITY ohms. m²/m

RESISTANCE Detail Curve

RESISTIVITY ohms. m²/m

SHORT NORMAL 16 Inch 0 100

LONG NORMAL 64 Inch 0 100

Depths

SPONTANEOUS POTENTIAL millivolts 5 0 +

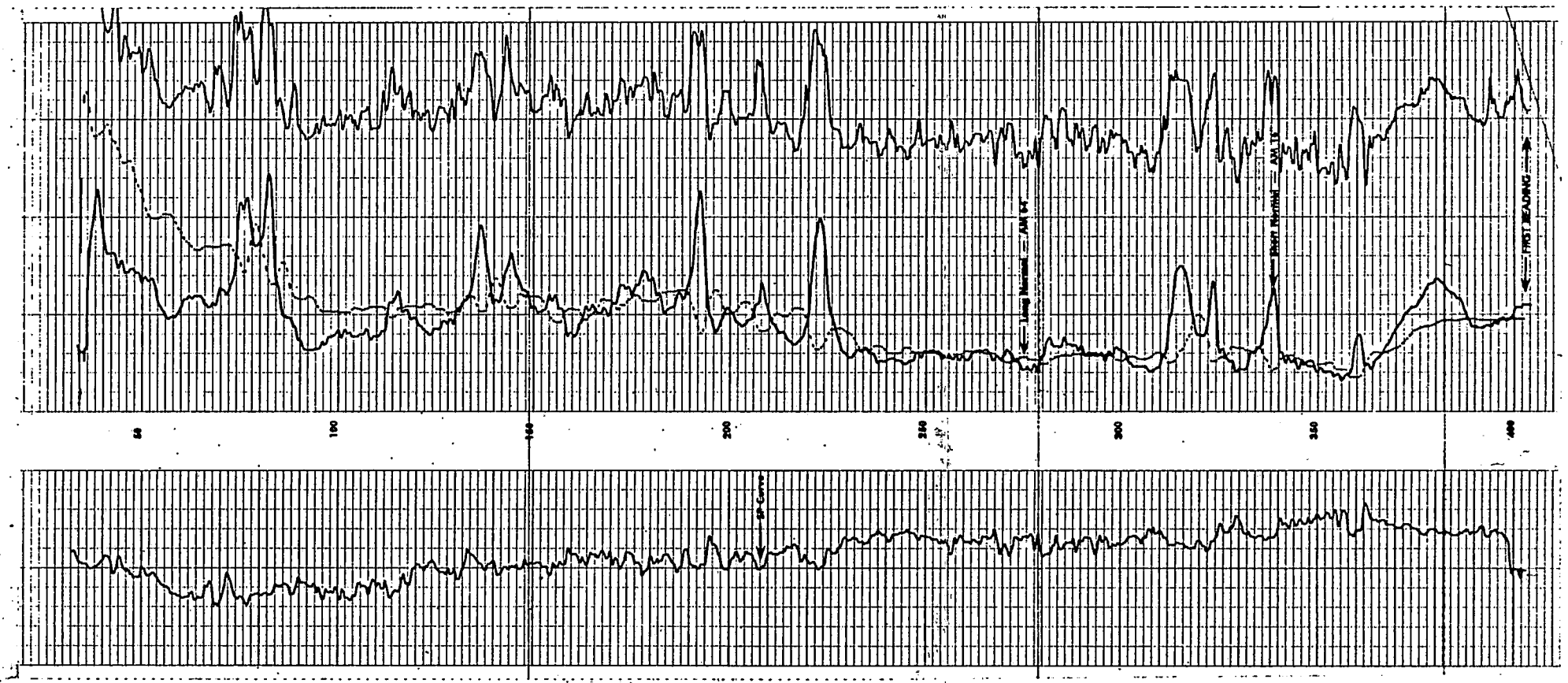
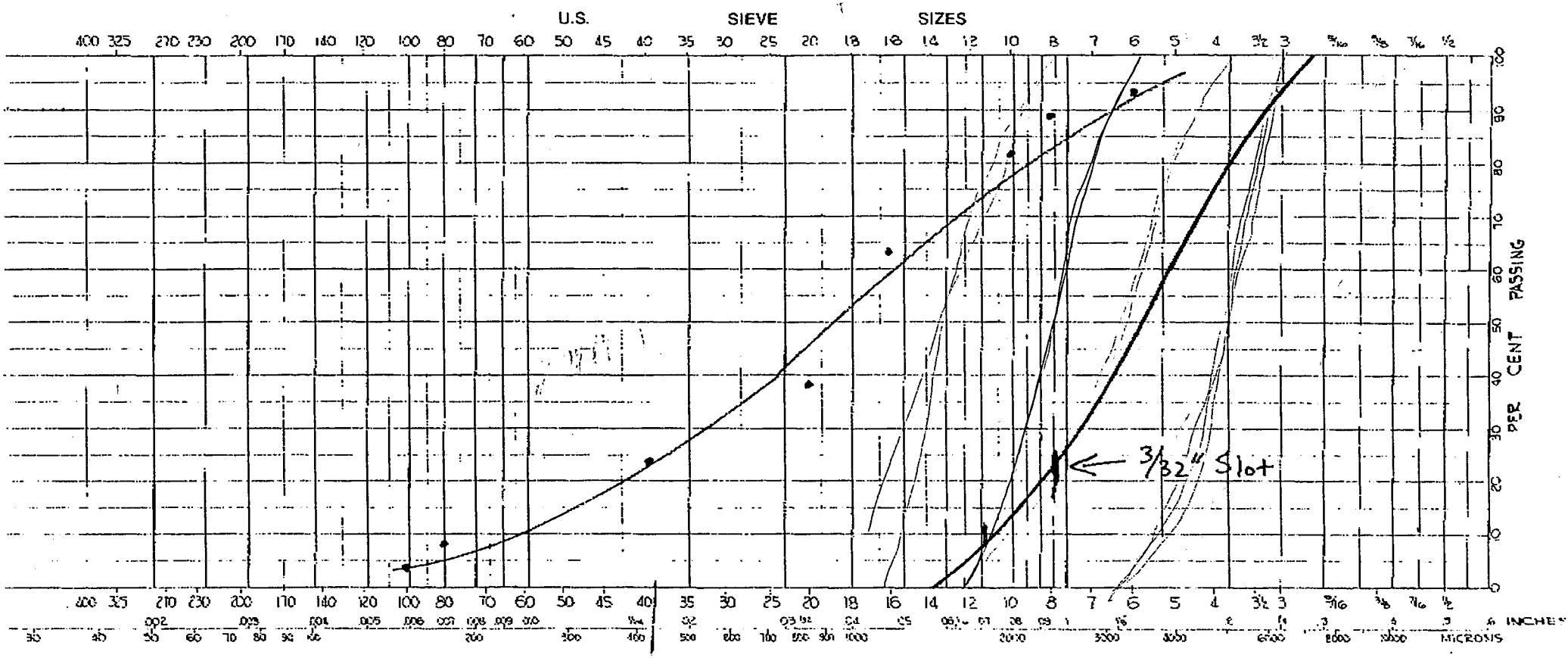


FIGURE 2

VATER WELL GRAVEL PACK AND FORMATION MECHANICAL GRADING ANALYSIS

FIGURE 3



Formation Analysis		Gravel Pack Analysis	
Screen Size	% Passing	Screen Size	% Passing

Customer: Washoe County Util. Div.

Well Name & Number:

Well Location: Picollo School (300'-310')

Gravel Name or Number: 5/16 x 1/16 or 3 X14 4X12

Vendor:

Driller:

Date: 7-6-90

Roscoe Moss Company

4360 Worth Street
Los Angeles, California
90039

P.O. Box 31064
Los Angeles, California
90031

213-[redacted]111

BOREHOLE DRILLING AND LITHOLOGY
PICOLLO MUNICIPAL WELL

BOREHOLE DRILLING

Prior to borehole drilling, a 10 foot section of 41 inch surface casing was grouted in place to help maintain rig stability. A 32 inch diameter borehole was drilled from 10 to 100 feet using a 32 inch Lang Flat Bottom bit. A 22 inch diameter borehole was drilled from 100 to 360 feet with a 22 inch Lang Flat Bottom bit. The well was drilled using the dual tube flooded reverse method. Drilling operations were performed on a Lang modified top head rotary rig.

Drilling fluid consisted of high yield bentonite clay with varying amounts of viscosity and density adjusting additives. An auxiliary mud tank equipped with a cyclone desander and sand shaker minimized re-circulation of drilling cuttings. Tank impellers prevented floculation of the bentonite in the drilling fluid.

LITHOLOGY

Lithology consisted of poorly sorted, volcanic/granitic sand and gravel with thin silty clay stringers from 0 to 232 feet. Sticky, sandy clay with medium grained sand was encountered from 232 to 400 feet.

WELL CONSTRUCTION
PICOLLO OBSERVATION WELL

WELL CASING

2 inch galvanized steel pipe was set in the borehole from +2 to 400 feet. Blank steel pipe was installed from +2 to 128 feet and 338 to 359 feet. Perforated pipe with 1/8" x 3" millslots was installed from 128 to 338 feet and 359 to 400 feet. All pipe lengths were connected using threaded couplings. A steel cap was screwed on the bottom of the pipe. A finalized construction diagram of the observation well is shown in Figure 4.

GRAVEL PACK

The filter pack material used was a siliceous pea gravel from Paiute Pit in Fernley, Nevada. The gravel was installed by hand through a funnel and tremie pipe apparatus from 120 to 400 feet. Clean water was mixed with the gravel to help prevent bridging in the annulus.

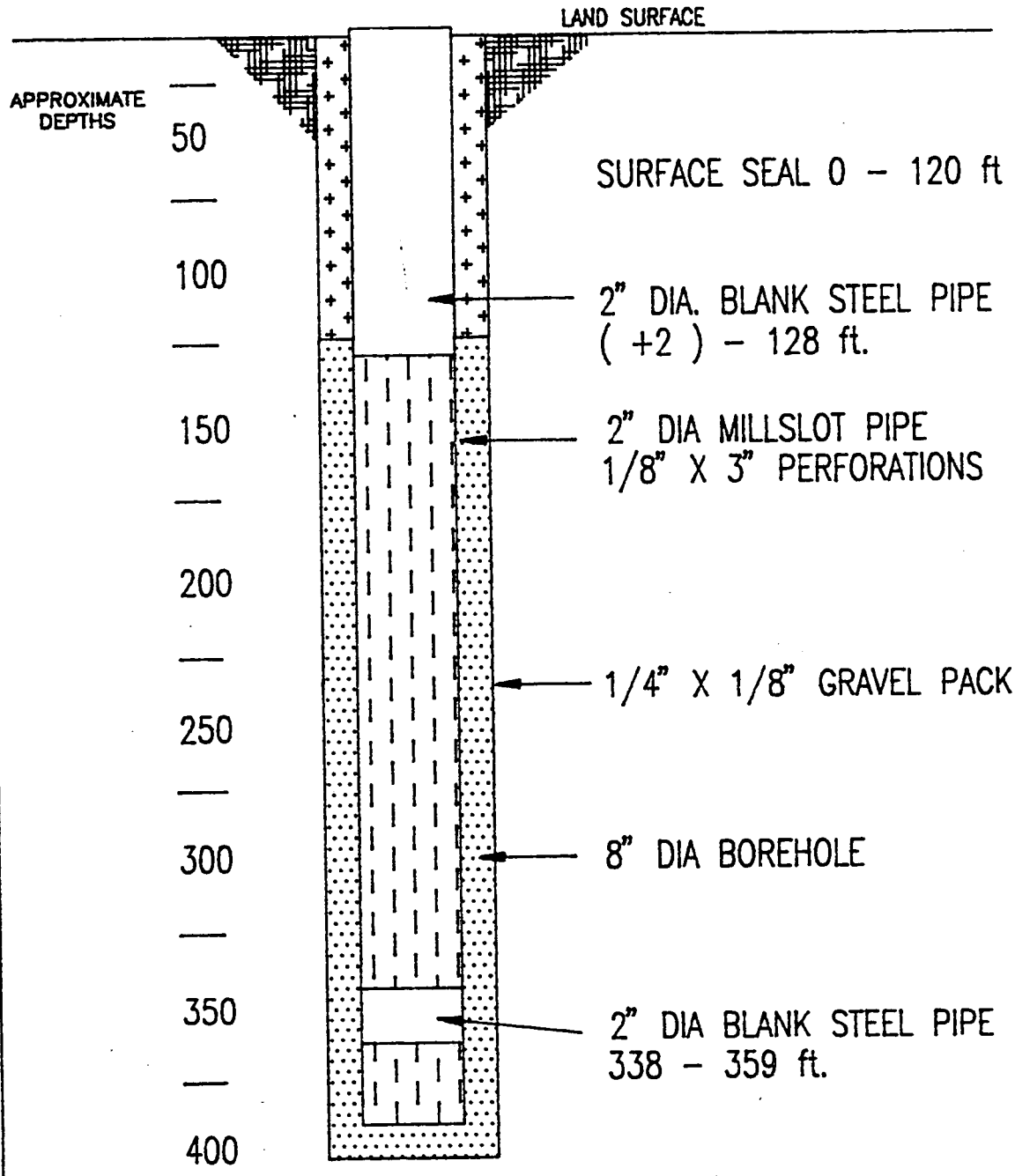
SANITARY SURFACE SEAL

A neat cement sanitary surface seal was installed to a depth of 120 feet below ground level. The neat cement was installed using a grout pump through a tremie pipe placed 10 feet above the top of the filter pack.

WELL DEVELOPMENT

The observation well was developed by air lifting until the discharge was clean. This was accomplished by slowly unloading drilling fluid from the well a section at a time, starting from the top. Development lasted for 6 hours.

PICOLLO MONITORING WELL
FINALIZED CONSTRUCTION
FIGURE 4



WELL CONSTRUCTION
PICOLLO MUNICIPAL WELL

WELL CASING AND INSTALLATION

A 24 inch diameter conductor casing was set from +1 to 100 feet. The conductor casing was grouted in place using neat cement. The grout was mixed on site in a mud mixer and pumped through a tremie pipe placed at the bottom of the annular space. An initial tank of cement was pumped and allowed to gel for 1 hour. The annulus was grouted in a series of lifts with each lift being allowed to strengthen prior to addition of the next.

12 inch low carbon steel production casing was installed from +2 to 360 feet. Blank steel casing was installed from +2 to 130 feet, 230 to 250 feet and 350 to 360 feet. 90 slot (0.090 inch) wire wrap well screen was installed from 130 to 230 feet and 250 to 350 feet. Casing and screen joints were fully butt welded. Centralizers were welded to the casing at: 350, 310, 250, 170, 110 and 50 feet. A 1 inch sounding tube was installed in the gravel pack to a depth of 240 feet. A finalized construction diagram is shown in Figure 5.

GRAVEL PACK

The filter pack material is a clean, siliceous gravel provided by Chevreaux Brothers of Auburn, California. An auxiliary mixer pumping into a tremie pipe was used to place the filter pack in the annular space. Clean water was mixed and pumped with the gravel to prevent bridging. The tremie pipe was set 10 feet above the bottom of the borehole. To ensure casing alignment, the production casing was held in suspension above the borehole bottom.

WELL DEVELOPMENT

The well was developed by air lifting after the placement of the gravel pack. 20 foot sections were agitated by slowly rotating a jetting tool up and down the interval. Periodically, the air supply was shut off to surge the well. Air lift development lasted for 85 hours. After installation of the test pump, the well was developed by pumping for 36 hours. Surging intervals of pumping for 30 minutes and off for 5 minutes were used.

A Rossum Sand Tester was used extensively while developing the Picollo Municipal well. During development, tests were started 10 to 15 minutes after surging the well and measured over an interval of 10 to 20 minutes. On the final day of development, sand production dropped from 12 to 2 parts per million.

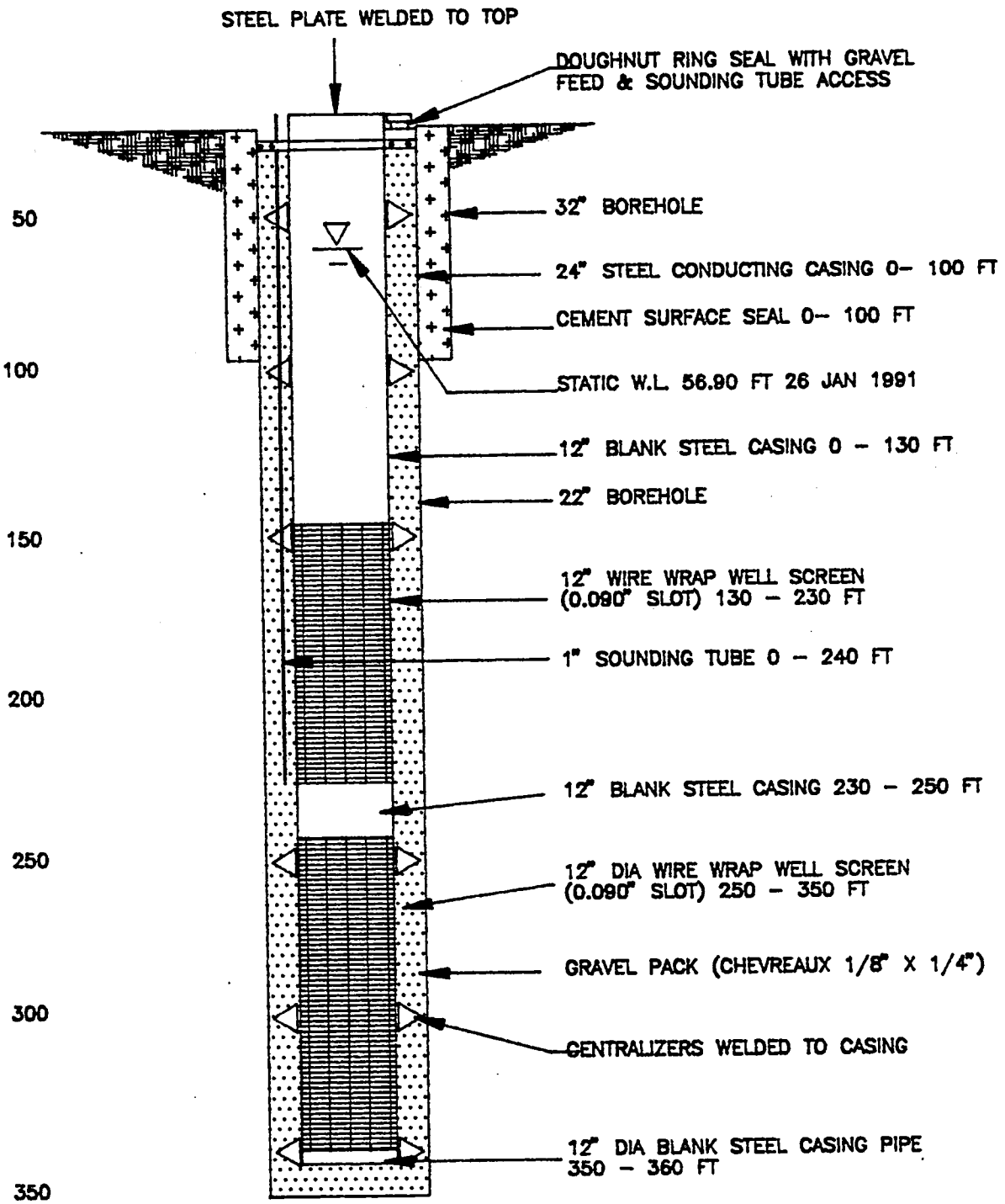


FIGURE 5
FINALIZED CONSTRUCTION
MARVIN PICOLLO SCHOOL WELL
NOVEMBER 1990

TEST PUMPING

PUMPING TEST EQUIPMENT

The pumping test was conducted using a line shaft turbine pump consisting of a direct drive motor and 28 stage bowl assembly. Power was supplied by a portable diesel engine. The pump bowls were set at 110 feet using a 6 inch diameter pump column.

The discharge rate was measured using a 6 inch horizontal discharge pipe with a 4 inch orifice plate. A manometer and vertical scale were used to read head of water in inches. The head measurements were used with a rating table to find discharge rates in gallons per minute. The Last Chance ditch was used to collect well discharge during pumping.

Water levels in the test well were measured in a 1 inch PVC sounding tube to the nearest 1/100th foot. The sounding tube was set from the top of the well casing to 10 feet above the pump bowls. An electric sounder was used to measure water levels in the pumping and observation wells. A Rossum Sand Tester was installed behind the gate valve.

PUMPING TESTS PERFORMED

The pumping tests conducted and corresponding test periods for each are shown in Table 2.

Table 2
PUMPING TESTS PERFORMED

TEST	DATE BEGAN	TEST START (hrs)	TEST END (hrs)	DURATION (min)	DISCHARGE (gpm)
Step Drawdown	1/25/91	0800	1430	400	211 to 513
Constant Discharge	1/26/91	0900	0900	4320	427
Recovery	1/29/91	0900	0900	2880	0

STEP DRAWDOWN TEST

The step drawdown were analyzed according to the method of Jacob (1947). Well efficiencies were calculated using the equations:

$$a.\quad Sw = BQ + CQ^2$$

$$b.\quad \text{Efficiency} = 1/(1+(C/B)Q)$$

Table 3 summarizes the step drawdown data analysis:

Table 3
STEP DRAWDOWN ANALYSIS

STEP (n)	WELL YIELD: Q (gpm)	DURATION (min)	DRAWDOWN: s (feet)	Q/s (gpm/ft)	EFFICIENCY (%)
1	211	100	24.44	8.63	94
2	312	100	37.96	8.22	91
3	412	100	51.76	7.95	88
4	513	100	66.70	7.70	86

A drawdown versus time plot of the step drawdown test is shown in Figure 6. Graphic solutions for well efficiency are shown in Figures 7 and 8.

CONSTANT DISCHARGE TEST

The constant discharge test ran for 72 hours at a pumping rate of 427 gpm. Data was collected from the pumping well, a county monitoring well and 2 nearby domestic wells. The county monitoring well is located 36.5 feet north of the test well. Distances from the test well to the unequipped Snaza well and equipped Watson well are 280 and 680 feet, respectively.

After 72 hours of pumping, drawdown in the pumping well was 70.42 feet with a pumping level of 127.33 feet. A drawdown of 40.27 feet was observed in the county monitoring well after 72 hours of pumping in the test well.

A Rossum Sand Tester was used to quantify sand production. The first 25 minutes of pumping yielded 10.6 parts per million of sand. The sample was composed of fine silt and micaceous fragments. A second test was started after completion of the first test. A measurement of 1.5 ppm was observed after 35 minutes. Sand production was measured at 1.5 ppm or less during the remainder of the test.

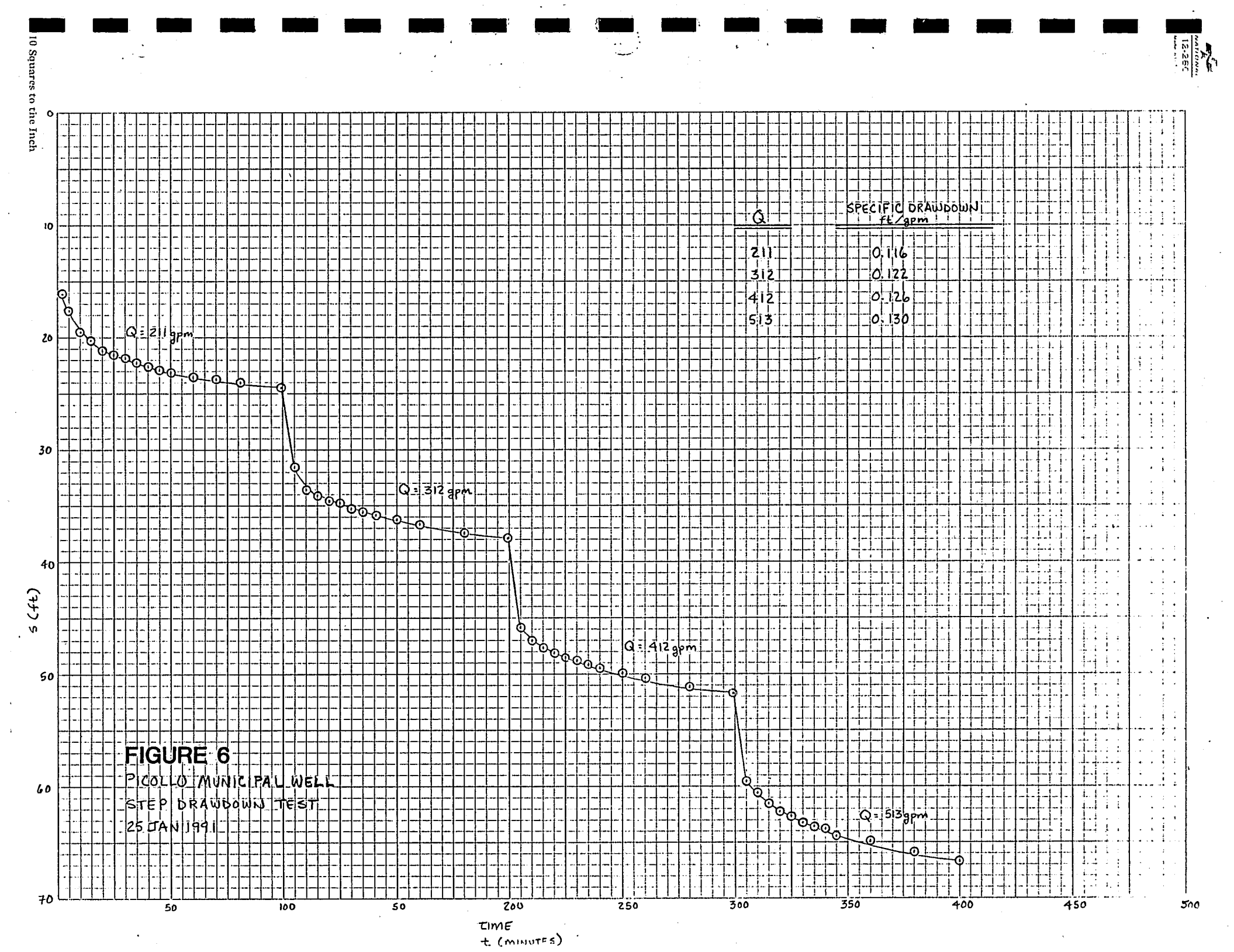


FIGURE 6
PICOLLO MUNICIPAL WELL
STEP DRAWDOWN TEST
25 JAN 1991

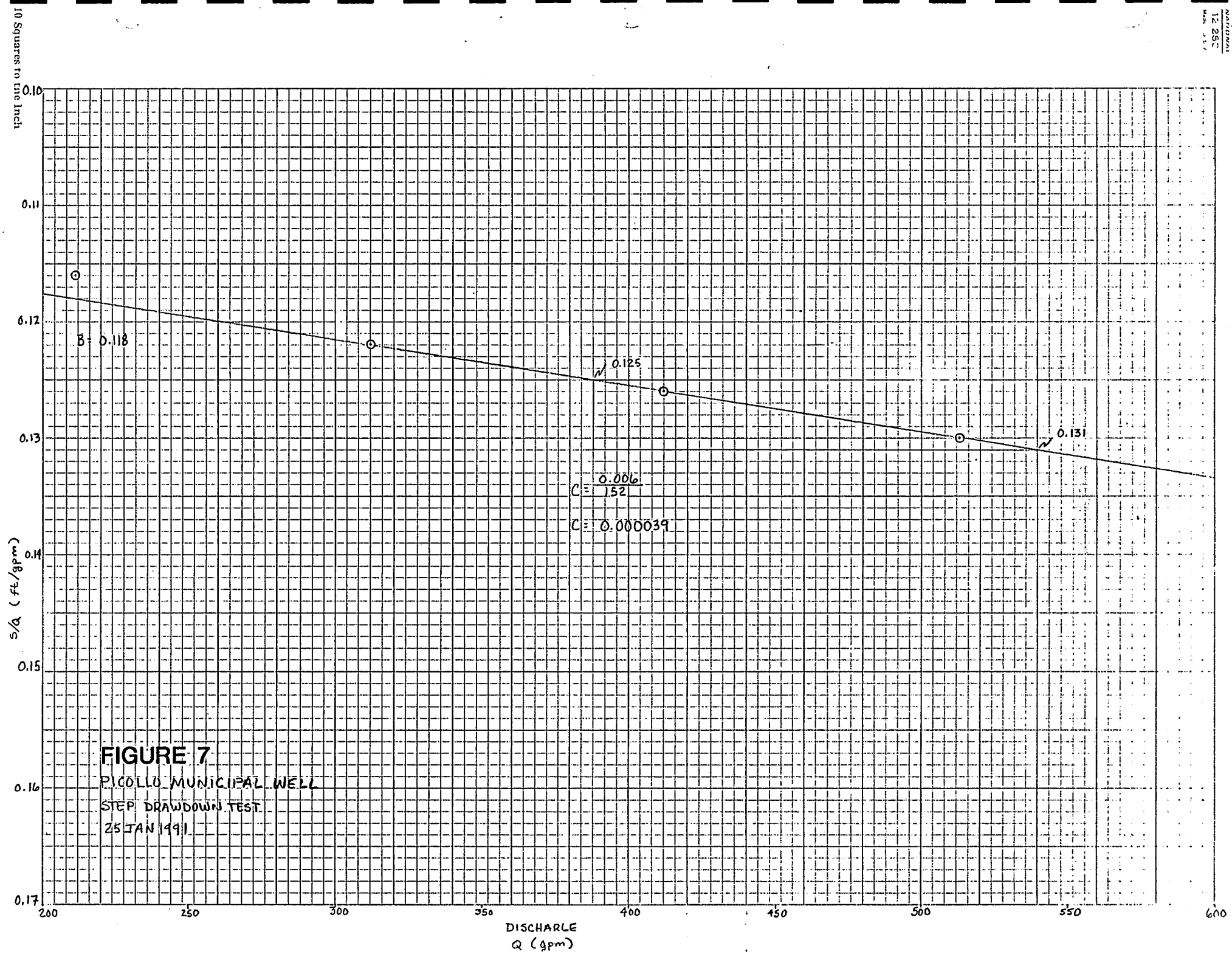
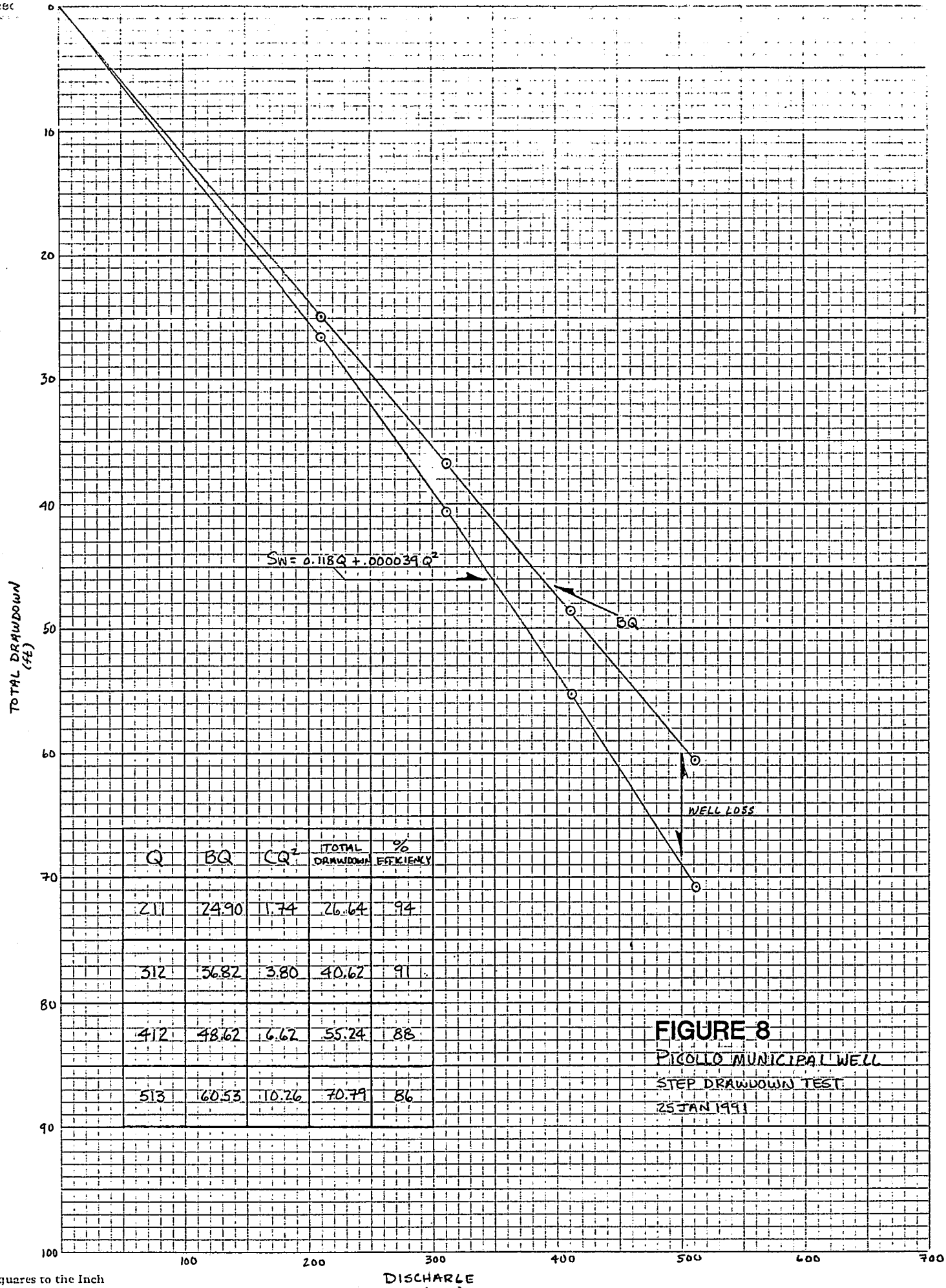


FIGURE 7

PICOLLO MUNICIPAL WELL

STEP DRAWDOWN TEST

25 JAN 1991



Q	BQ	CQ^2	TOTAL DRAWDOWN	% EFFICIENCY
211	24.90	1.74	26.64	94
312	36.82	3.80	40.62	91
412	48.62	6.62	55.24	88
513	60.53	10.26	70.79	86

FIGURE 8
PICOLLO MUNICIPAL WELL
STEP DRAWDOWN TEST
25 JAN 1991

10 Squares to the Inch

The constant discharge data from the well in conjunction with borehole cutting interpretation, indicate that the contributing aquifer to the test well is partially confined. The drawdown curve for the test well shows a slope change at 250 minutes. The slope may be caused by slow vertical leakage or delayed aquifer yield. An inhomogeneous aquifer composed of semi-confining layers of sand, gravel and clay, could create the response observed during testing.

Aquifer transmissivity and storage coefficient were calculated using pumping and recovery data from the test and county observation wells. A transmissivity of 10,600 gpd/ft and storage coefficient of 0.0017 were obtained. Time versus drawdown graphs for the test and county observation well are shown in Figures 9 and 10. Time versus drawdown graphs for the Snaza and Watson domestic wells are shown in Figures 11 and 12. Residual drawdown versus t/t' graphs for test and observation wells are shown in Figures 13, 14, 15 and 16.

RECOMMENDATION

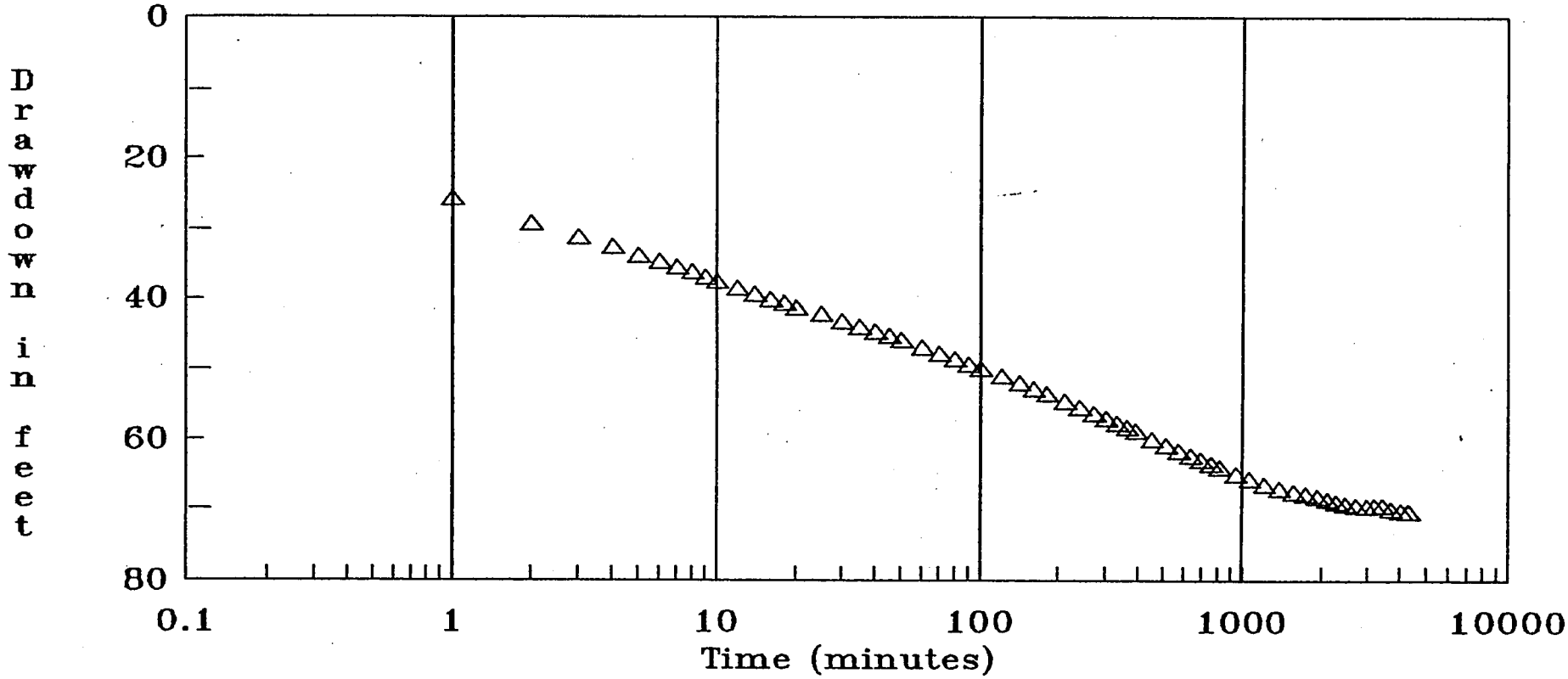
We recommend that the Picollo Municipal Well be equipped at a pumping capacity of 300 gpm. The pump intake should be set in the blank casing section between 230 to 250 feet. The well would have a predicted pumping level of 106 feet after 48 hours of continuous pumping at 300 gpm. Table 4 shows estimated drawdown and pumping levels at various pumping rates after 48 hours of continuous pumping.

Table 4
ESTIMATED DRAWDOWN AND PUMPING LEVELS

Q (gpm)	Drawdown (feet)	Static Water Level (feet)	Pumping Level (feet)
100	16.5	57	73.5
200	32.7	57	89.7
250	41.0	57	98.0
300	49.0	57	106.0
350	57.5	57	114.5
400	65.5	57	122.5

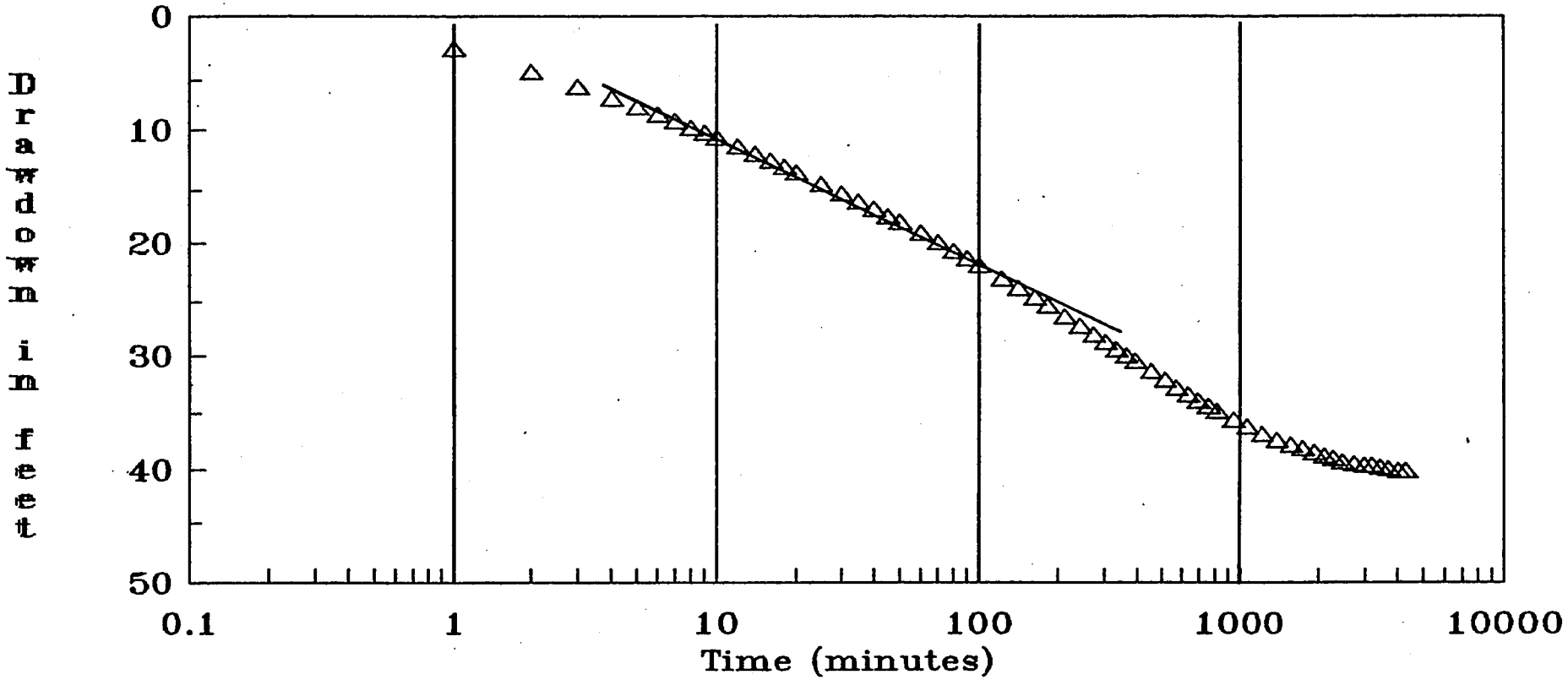
PICOLLO MUNICIPAL WELL
Constant Discharge Test
26 – 29 JAN 1991
FIGURE 9

Q: 427 GPM
ΔS: 12.4 FT/CYCLE
T= 9100 gpd/ft



PICOLLO OBSERVATION WELL
Picollo Municipal Well Constant
Discharge Test 26–29 Jan 91
FIGURE 10

Q: 427 GPM
△S: 11.0 FT/CYCLE
T= 10,250 gpd/ft



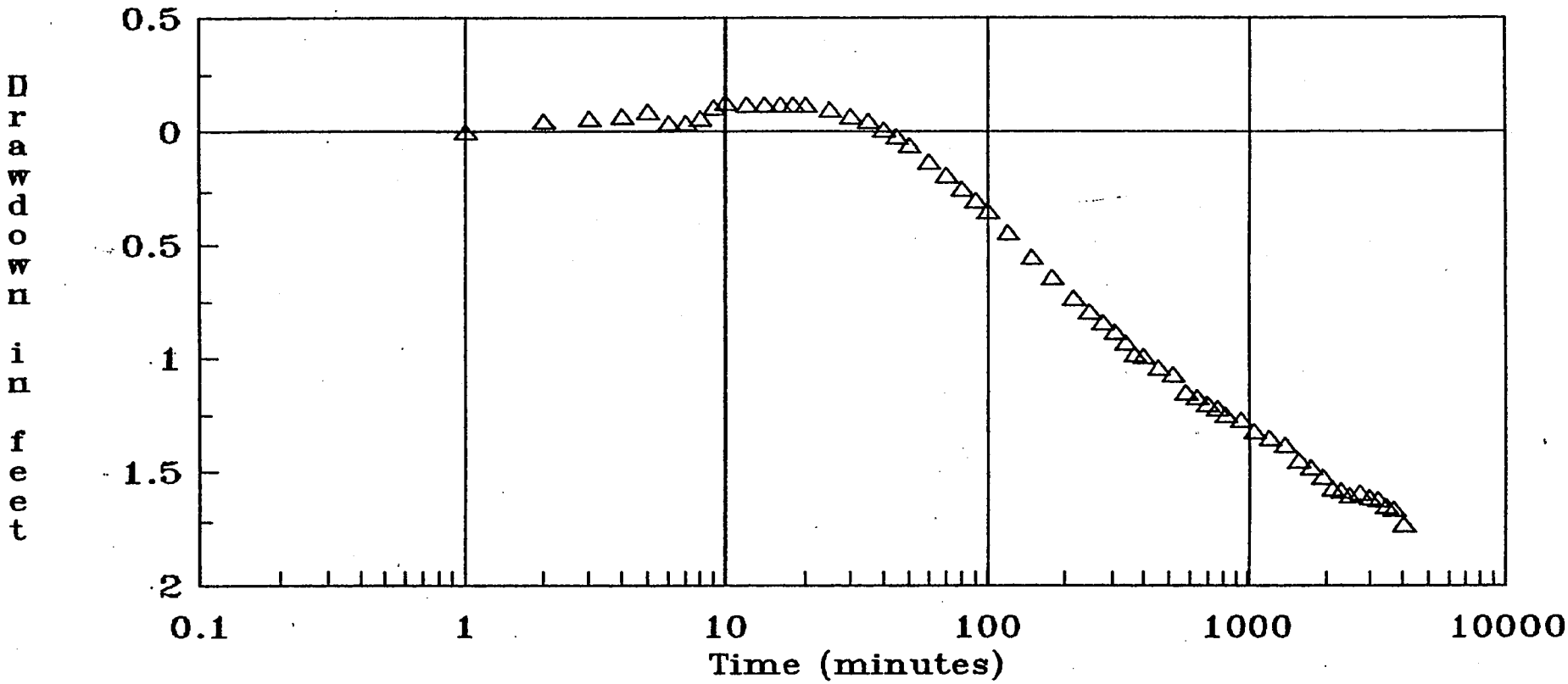
SNAZA DOMESTIC WELL

Q: 427 GPM

Picollo Municipal Well Constant

Discharge Test 26-29 Jan 91

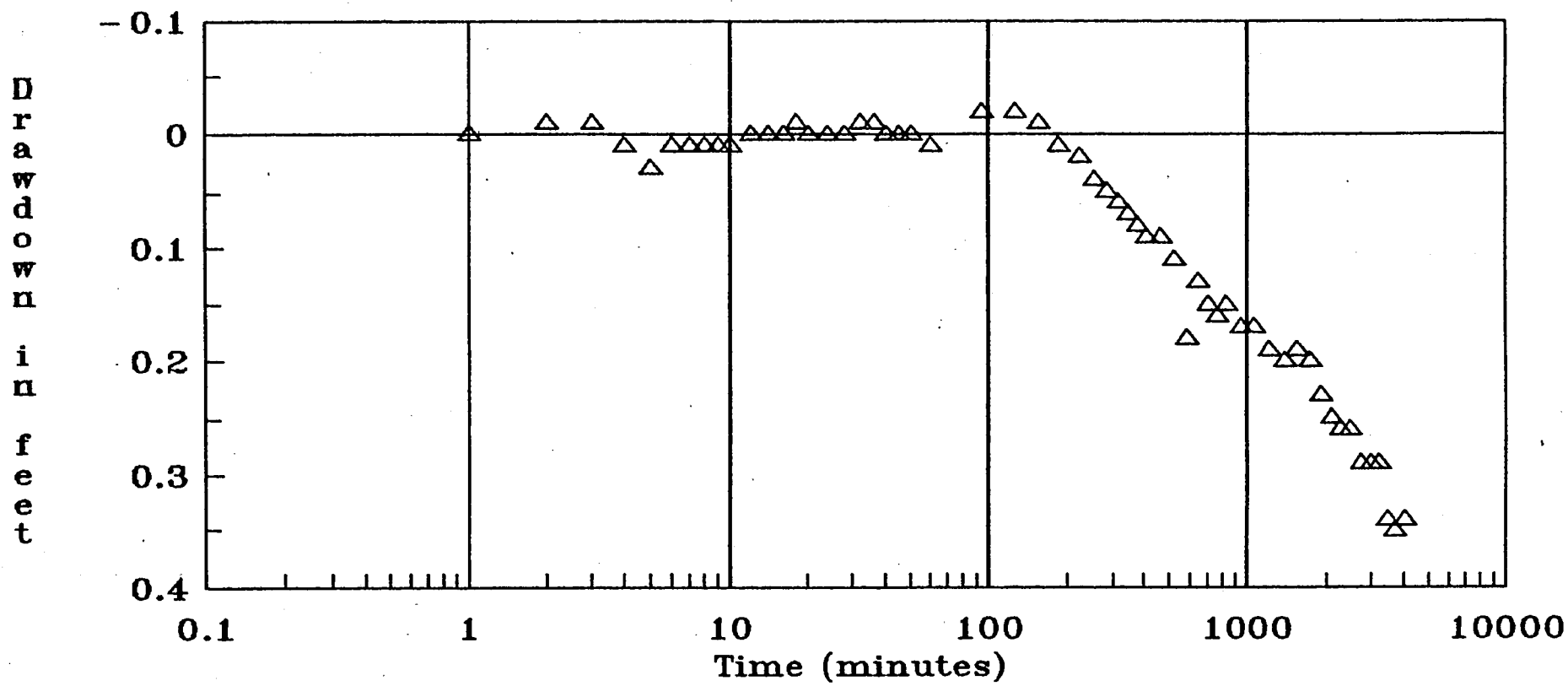
FIGURE 11



WATSON DOMESTIC WELL

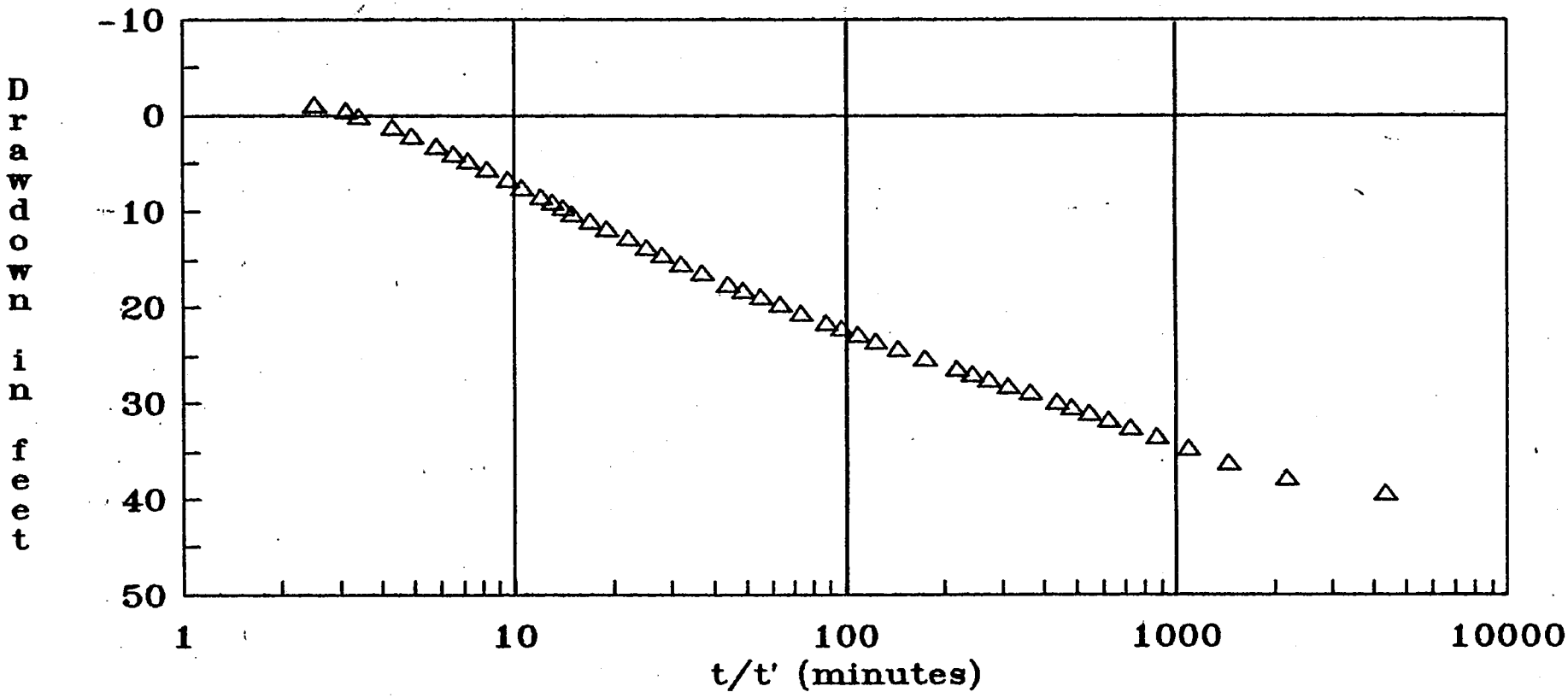
Q: 427 GPM

Picollo Municipal Well Constant
Discharge Test 26–29 Jan 91
FIGURE 12



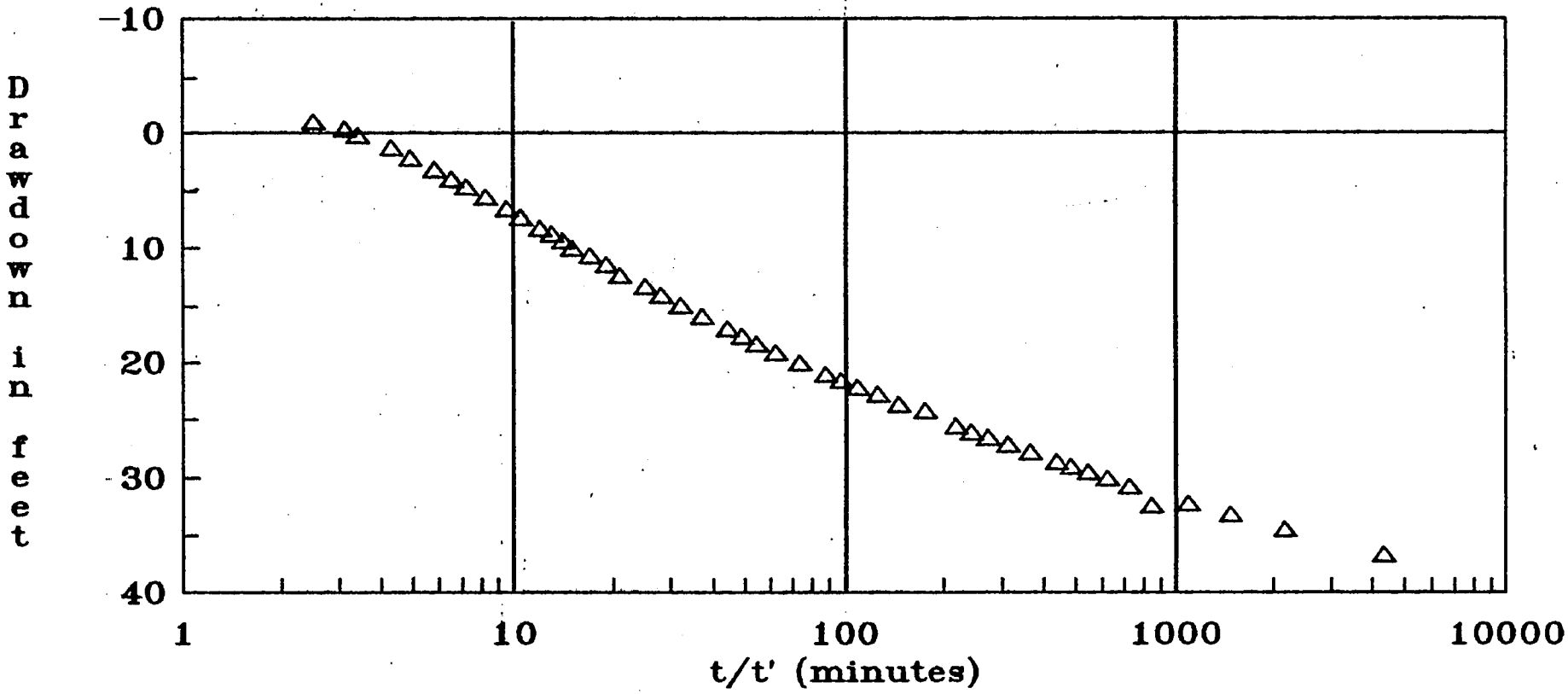
PICOLLO MUNICIPAL WELL
Constant Discharge Recovery Test
26 - 29 Jan 1991
FIGURE 13

Q: 427 GPM
△S: 12.0 FT/CYCLE
T= 9,400 gpd/ft



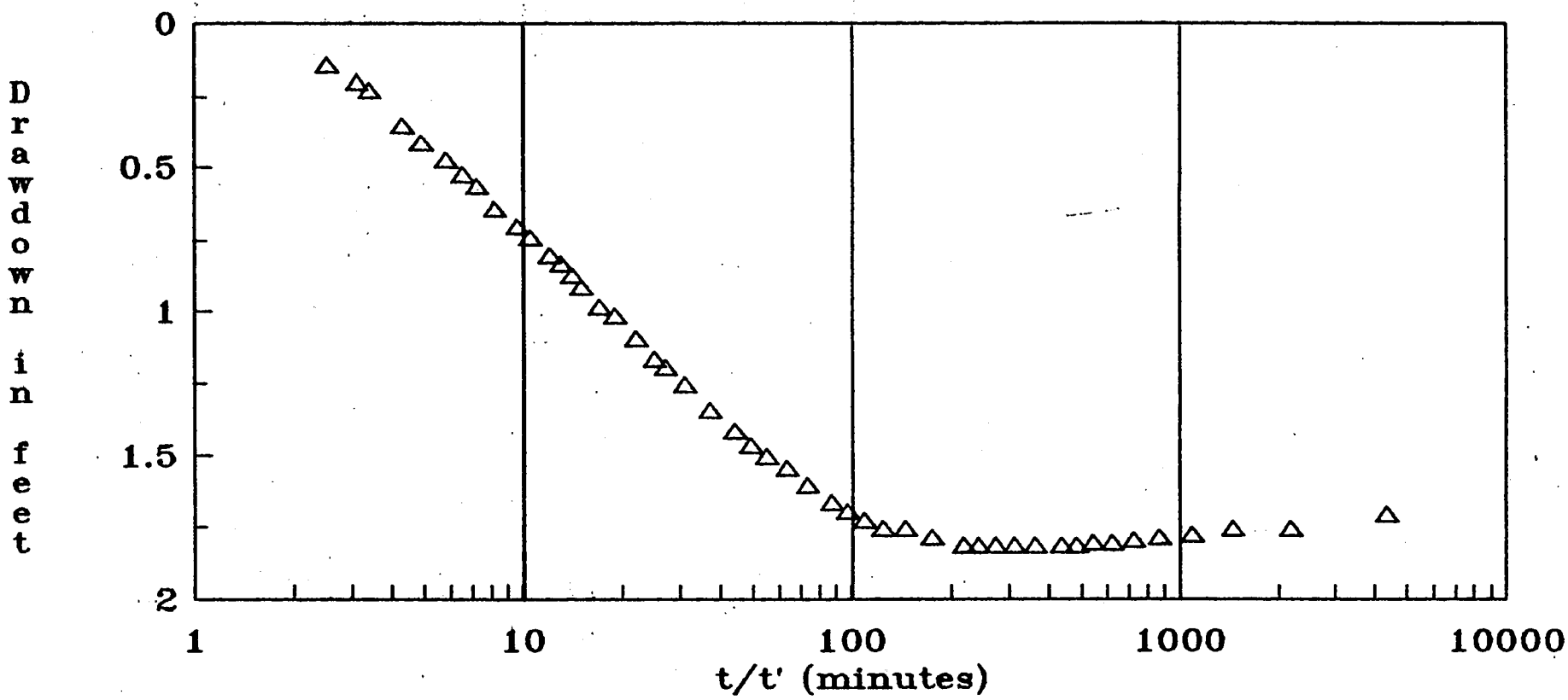
PICOLLO OBSERVATION WELL
Constant Discharge Recovery Test
26 - 29 Jan 1991
FIGURE 14

Q: 427 GPM
△S: 10.3 FT/CYCLE
T= 10,950 gpd/ft



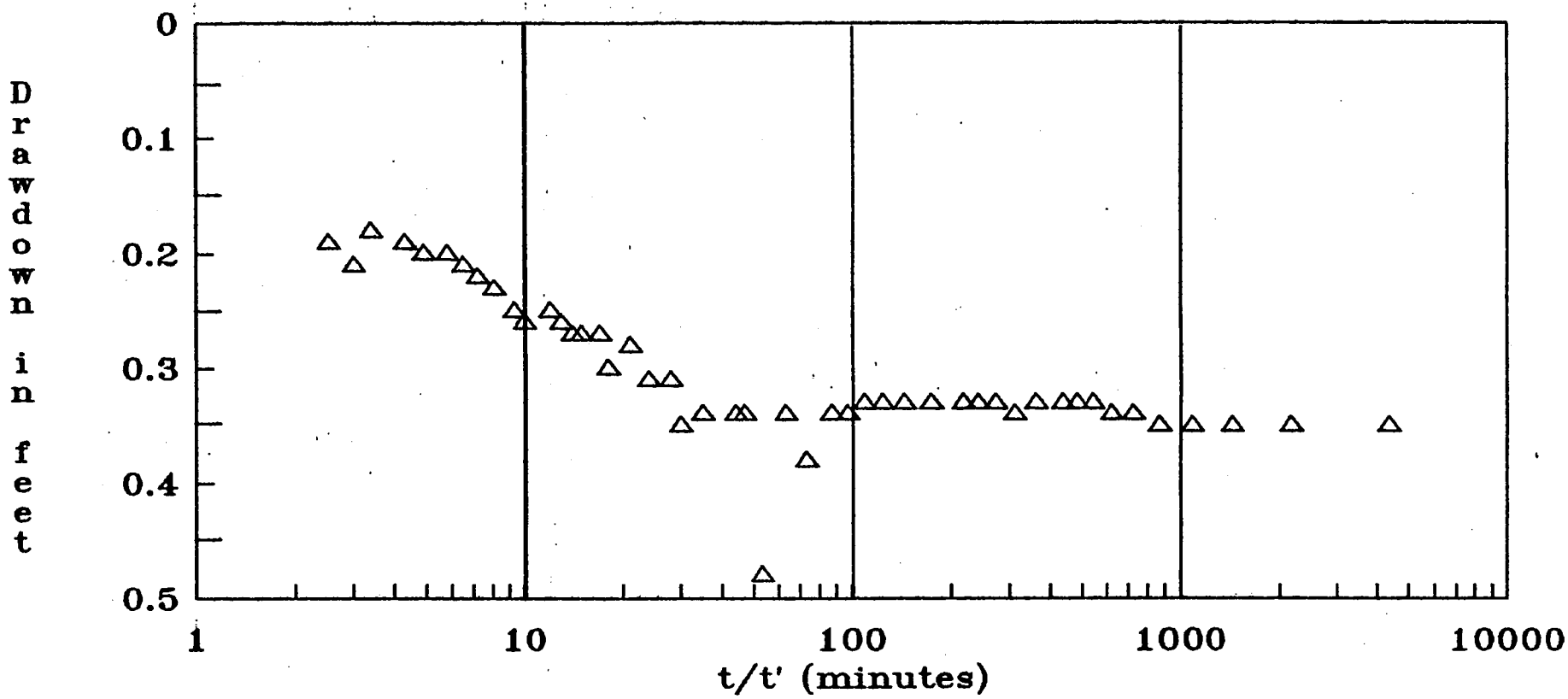
SNAZA DOMESTIC WELL
Constant Discharge Recovery Test
26 – 29 Jan 1991
FIGURE 15

Q: 427 GPM



WATSON DOMESTIC WELL
Constant Discharge Recovery Test
26 - 29 Jan 1991
FIGURE 16

Q: 427 GPM



WATER QUALITY

SAMPLING TECHNIQUE

A sample was collected for water quality analyses at the end of the 72 hour constant discharge test, prior to pump shut off. A one gallon sample was collected at the orifice plate opening on the discharge pipe in a clean plastic container. Three separate aliquots were poured from the initial sample and preserved in nitric and sulfuric acid. The samples were kept refrigerated until delivery for testing at the Nevada State Health Laboratory.

RESULTS

The water quality analyses show that the Picollo Municipal Well will provide potable water that meets State of Nevada primary and secondary drinking water standards. Total dissolved solids in the well were measured at 196 parts per million (ppm). Well water hardness is 121 ppm and can be considered hard.

A Ryznar Stability Index value of 8.1 was calculated using the following formula:

$$I = S - C - pH$$

The factors S and C are derived graphically using total dissolved solids, methyl orange alkalinity and calcium ion concentrations. The median value for the index is 7. Ryznar Stability Index values over 7 are considered corrosive with values under 7 indicating incrustation. The test well value of 8.1 in conjunction with a pH of 8, indicate the Picollo Municipal Well water is slightly corrosive. The water quality analyses report for the test well is shown in Table 5. Table 6 contains the water quality analyses report for the county observation well.

(PLEASE PRINT OR TYPE)

144

NEVADA DIVISION OF HEALTH
1660 N. Virginia Street
Reno, Nevada 89503
(702) 789-0335

RECEIVED MAR 1991 WASHOE COUNTY UTILITY DIVISION MAR 06 1991

Table 5

081144

WATER CHEMISTRY ANALYSIS

Attn: Fees may apply to some types of samples.

All of the information below must be filled in or the analysis will not be performed.

State NV County WASHOE
Township 18 Range 20 Section 18
General Location So WEST RENO
Source Address FOOTHILL BLVD @ PICOLLO SCHOOL

TYPE OF ANALYSIS:

☐ Check here for ROUTINE DOMESTIC ANALYSIS.
Circle the constituents needed for PARTIAL ANALYSIS.

SAMPLING INSTRUCTIONS:

The sample submitted must be representative of the source. Spring and surface water samples should be as free of dirt and debris as possible. Wells should be mped thoroughly before sampling, changing the water in the casing at least ree times. Product water from filters should be sampled after running for bout ten (10) minutes.

ON 1/29/91

Sampled by ED EVANS Date 2/4/91
Owner W.C. UTILITY DIV Phone 785 4743
Address P.O. BOX 11130
City RENO State NV

REASON FOR ANALYSIS:

☐ Loan
☐ Personal health reasons
☐ Purchase of the property
☐ Rental or sale of property
☐ Subdivision approval
☑ Other SDWA

USE OF WATER:

☑ Domestic drinking water
☐ Geothermal
☐ Industrial or mining
☐ Irrigation
☐ Other
Initials

REPORT TO:

Name TERRI SVETICH
Address P.O. BOX 11130
City RENO
State NV Zip 89520

SOURCE OF WATER:

Filter ☐ Yes ☑ No
Public ☑ Yes ☐ No
Spring
Well ✓ Depth 330 ft.
Hot Cold ✓
IN USE ☐ Yes ☑ No

Type
Name
Surface
Casing diameter in.
Casing depth 330 ft.

The results below are representative only of the sample submitted to this laboratory.

FOR LABORATORY USE ONLY

-0.0243 245 0.65 31.4 ppm 7.3 0.0 -1715 ppm 081144 S.U.

Constituent	ppm	Constituent	ppm	Constituent	ppm	Constituent	S.U.
T.D.S. @ 103° C.	196	Chloride	1	Iron	0.01	Color	3
Hardness	121	Nitrate	6.0	Manganese	0.00	Turbidity	0
Calcium	22	Alkalinity	146	Copper	0.01	pH	7.95
Magnesium	16	Bicarbonate	178	Zinc	0.00	EC	302
Sodium	13	Carbonate	0	Barium	0.11		
Potassium	5	Fluoride	0.12	Boron	0.0		
Sulfate	4	Arsenic	<.003	Silica	67		
MBAS	<01			GROSS ALPHA	6pCi/L	Gross Radium Alpha	Insufficient sample
				GROSS BETA	6pCi/L		

PRINT OTHER DESIRED CONSTITUENTS BELOW

Constituent	ppm
Cd	<0.001
Cr	<0.005
Ag	<0.005
Hg	<0.0005
Pb	<0.005
Se	<0.001
YTC	

Fee Bill
Collected by
PWS I.D.
SDWA—Pri. Sec. MAR 06 1991
t 2nd 3rd
Date Rec'd 2.6.91 Ini RLA
m = parts per million, milligrams per liter
U. = Standard Units

Remarks 3.1.91 2.12.91 N
PICOLLO SCHOOL WELL GRAB
POTENTIAL PUBLIC WATER SUPPLY
SAMPLED AT THE END OF THE
72 HR PUMP TEST Sy 2-27-91

Sierra Environmental Monitoring Inc.
47 Glen Carran Circle
Sparks, NV 89431
(702)356-3868

Laboratory Analysis Report

Date : 6/27/90 Page: 1
Invoice #: 3238
Client # : WAS-314 PO#: 108478
Name : Washoe County Public Utility
Address : P.O. Box 11130
City : Reno State: NV Zip: 89520
Taken by : Washoe County-Dan Dragon

Sample	Collection Date	Collection Time	ALKALINITY MG/L CAC03	COLOR C.U.	pH S.U.	TOTAL DISSOL. MG/L	NITRATE-N MG/L	ARSENIC MG/L	BARIUM MG/L
PICCOLO WELL SITE	6/19/90	9:30	148	< 5	7.6	234	7.6 NO3	0.002	<0.3

Sample	Collection Date	Collection Time	BORON MG/L	CALCIUM MG/L	COPPER MG/L	IRON MG/L	MAGNESIUM MG/L	MANGANESE MG/L	POTASSIUM MG/L
PICCOLO WELL SITE	6/19/90	9:30	< 0.1	24.4	0.57	0.02	13.6	<0.02	6.8

Sample	Collection Date	Collection Time	SODIUM MG/L	ZINC MG/L	CHLORIDE MG/L	FLUORIDE MG/L	SULFATE MG/L	MBAS MG/L		
PICCOLO WELL SITE	6/19/90	9:30	16.1	2.3	8	0.1	6	< 0.05		

Table 6
Picollo Observation Well
Water Quality Analysis

Approved By: _____

APPENDIX I
WELL DRILLER'S REPORT
SUBMITTED TO THE STATE OF NEVADA, DEPARTMENT OF WATER RESOURCES

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety

OFFICE USE ONLY
Log No.
Permit No.
Basin

PRINT OR TYPE ONLY

NOTICE OF INTENT NO. 16276

1. OWNER WASHOE COUNTY PUBLIC WORKS
MAILING ADDRESS PO BOX 11130
RENO, NV. 89520

ADDRESS AT WELL LOCATION
PICOLLO SCHOOL ON FOOTHILL RD.

2. LOCATION NW 1/4 ¼ NE ¼ Sec. 18 T 18 N/S R. 20 E WASHOE County

PERMIT NO. 49470 (Issued by Water Resources) | 44-030-08 (Parcel No.) | N/A (Subdivision Name)

3. TYPE OF WORK
New Well ☒ Recondition ☐
Deepen ☐ Other ☐

4. PROPOSED USE
Domestic ☐ Irrigation ☐ Test ☐
Municipal ☒ Industrial ☐ Stock ☐

5. TYPE WELL
Cable ☐ Rotary ☒
Other ☐

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
POORLY SORTED, COARSE SAND, GRAVEL & BOULDERS		0	43	43
SAND, GRAVEL & SANDY CLAY	X	43	74	31
MED TO COARSE VOLCANIC SAND	XX	74	90	16
COARSE SANDS & GRAVELS RED, PURPLE, GRAY	XX	90	133	43
VOLCANIC SANDS	XX	133	160	27
VOLCANIC SANDS WITH GRAY SANDY CLAY	X	160	222	62
VOLCANIC SANDS & GRAVELS	XX	222	240	18
BROWN CLAY WITH SANDS & GRAVELS	X	240	265	25

Date started OCTOBER 28, 1990
Date completed NOVEMBER 28, 1990

7. WELL TEST DATA

Pump RPM	G.P.M.	Draw Down	After Hours Pump

BAILER TEST
G.P.M. ____ Draw down ____ feet ____ hours
G.P.M. ____ Draw down ____ feet ____ hours
G.P.M. ____ Draw down ____ feet ____ hours

8. WELL CONSTRUCTION
Diameter 32 inches Total depth 362 feet
22 inches
inches
Casing record 24" 95 LB/FT .375"
Weight per foot 12" 50 LB/FT Thickness .375"

Diameter	From	To
24 inches	+2 feet	100 feet
12 inches	+2 feet	362 feet
inches	feet	feet
inches	feet	feet
inches	feet	feet
inches	feet	feet

Surface seal: Yes ☒ No ☐ Type NEAT CEMENT
Depth of seal 100 feet
Gravel packed: Yes ☒ No ☐
Gravel packed from 0 feet to 362 feet

Perforations:
Type perforation SCREEN
Size perforation .090
From 130 feet to 230 feet
From 250 feet to 350 feet
From 350 feet to 362 feet
From ____ feet to ____ feet
From ____ feet to ____ feet

9. WATER LEVEL
Static water level 38 feet below land surface
Flow N/A G.P.M. N/A P.S.I.
Water temperature COOL °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LANG EXPLORATORY DRILLING (Contractor)
Address 2286 W. 1500 S., S.L.C., UT. 84104 (Contractor)
Nevada contractor's license number issued by the State Contractor's Board 0021976
Nevada contractor's driller's number issued by the Division of Water Resources 1365
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1716
Signed DAVID HAAS (By driller performing actual drilling on site or contractor)
Date NOVEMBER 28, 1990

(Rev. 11-85)
USE ADDITIONAL SHEETS IF NECESSARY
(O)-627

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety

PRINT OR TYPE ONLY

OFFICE USE ONLY
Log No.
Permit No.
Basin

NOTICE OF INTENT NO. 13679

1. OWNER Washoe County
MAILING ADDRESS P O Box 11130
Reno, NV 89520

ADDRESS AT WELL LOCATION
Monitor Well
South Truckee Meadows

2. LOCATION NW ¼ NE ¼ Sec. 18 T. 18 N/S R. 20 E. Washoe County

PERMIT NO. 49470 (Issued by Water Resources) | Parcel No. | Subdivision Name

Pacific School Site

3. TYPE OF WORK
New Well ☒ Recondition ☐
Deepen ☐ Other ☐

4. PROPOSED USE
Domestic ☐ Irrigation ☐ Test ☐
Municipal ☐ Industrial ☐ Stock ☐

5. TYPE WELL
Cable ☐ Rotary ☒
Other ☐

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Boulders w/s Sand & Clay		0	39	39
Clay w/s Silt & Sand Stringers		39	45	6
Clay w/s Sand & Gravel Stringers		45	400	355

JUL 1990 RECEIVED WASHOE COUNTY UTILITY DIVISION

8. WELL CONSTRUCTION
Diameter 8 inches Total depth 400' feet
inches
inches
Casing record 2"
Weight per foot Thickness

Diameter	From	To
2" Blank inches	+2 feet	127 feet
2" Millslot inches	127 feet	337 feet
2" Blank inches	337 feet	358 feet
2" Millslot inches	358 feet	400 feet
inches	feet	feet
inches	feet	feet

Surface seal: Yes ☒ No ☐ Type Grout
Depth of seal 120 feet
Gravel packed: Yes ☒ No ☐
Gravel packed from 120 feet to 400 feet

Perforations:
Type perforation Millslot
Size perforation 1/8 x 3
From feet to feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

9. WATER LEVEL
Static water level 48' feet below land surface
Flow G.P.M. P.S.I.
Water temperature °F Quality

Date started May 30, 19 90
Date completed June 1, 19 90

7. WELL TEST DATA

Pump RPM	G.P.M.	Draw Down	After Hours Pump

BAILER TEST
G.P.M. Draw down feet hours
G.P.M. Draw down feet hours
G.P.M. Draw down feet hours

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name Humboldt Drilling & Pump Co., Inc. (Contractor)
Address P.O. Box 592 Winnemucca, NV 89445 (Contractor)
Nevada contractor's license number issued by the State Contractor's Board 015234
Nevada contractor's driller's number issued by the Division of Water Resources C-23
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1448
Signed (By driller performing actual drilling on site or contractor)
Date 6-13-90

(Rev. 11-85) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

APPENDIX II
PUMP TEST DATA

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL PICOLLO MAIN WELL
(PUMPING) / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST: STEP DRAWDOWN
HOW Q MEASURED: 6"X4" ORIFICE WEIR
HOW WL's MEASURED: SOLINST ELECTRIC SOUNDER
PUMPED WELL NO.:
RADIUS of PUMPED WELL:
DISTANCE from PUMPED WELL:
M.P. for WL's: PVC STILLING WELL elev.:
DEPTH of PUMP/AIRLINE: wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 25 JAN 91 time 0800
PUMP OFF: date 25 JAN 91 time

TIME t = at t'=0					WATER LEVEL DATA (STATIC WATER LEVEL 58.68, R.O.C. 1.4')					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'	Q/s	H"	Q	(NOTE ANY CHANGES IN OBSERVERS)
		2			74.84			16.16		10.5	211	STEP I
		3			75.52			16.84				
		4			75.72			17.04				
		5			76.34			17.66		11.0		Q↓
		6			76.78			18.10				
		7			77.22			18.54				
		8			77.58			18.90				
		9			77.92			19.24				
		10			78.14			19.46				
		12			78.64			19.96				Q↓
		14			78.84			20.16				
		16			79.21			20.53				
		18			79.52			20.84				
		20			79.78			21.10		10.5	211	
0825		25			80.15			21.47				
		30			80.58			21.90				
		35			81.01			22.33				
		40			81.32			22.64	9.20			
		45			81.62			22.94				
		50			81.81			23.13				Q↑
		60			82.26			23.58				
		70			82.37			23.69				Q↑
		81			82.71			24.03				Q↑ PRESSURE DECLINE BEHIND VALVE
		99			83.12			24.44	8.63	10.5	211	
0940												STEP II
		103	3		90.27			31.59		23"	312	
1.45		105	5		91.10			32.42				Q↑
		107	7		91.63			32.95				
1.50	0950	110	10		92.16			33.48				
	0955	115	15		92.74			34.06				SNAZA 57.81 @ 1000
2	1000	120	20		93.18			34.50				Q↑
2.05	1005	125	25		93.56			34.88				STMLT SAND @ 2.03 3.6 ppm .10/15 mw
	1010	130	30		93.92			35.24				
	1015	135	35		94.23			35.55				
2.21	1021	141	41		94.50			35.82				Q↑
	1030	150	50		94.92			36.24	8.61			
	1040	160	60		95.35			36.67				SNAZA 57.88 @ 10:20
3	1100	180	80		96.09			37.41				SAND 2:41 WATSON 50.57 @ 10.55
	1119	199	99		96.64			37.96	8.22			

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Piccolo Main Well
(PUMPING)/OBSERVATION WELL
PUMPING/RECOVERY DATA
PAGE 2 OF 2

TYPE of PUMPING TEST Step Drawdown
HOW Q MEASURED 6" x 4" Orifice
HOW WL's MEASURED Solnist 300'
PUMPED WELL NO. _____
RADIUS of PUMPED WELL _____
DISTANCE from PUMPED WELL _____

M.P. for WL's PVC stilling well elev. _____
DEPTH of PUMP/AIRLINE _____ wrt _____
% SUBMERGENCE: initial _____ ; pumping _____
PUMP ON: date 25JAN90 time _____
PUMP OFF: date 25JAN90 time _____

TIME t =		at t'=0			WATER LEVEL DATA STATIC WATER LEVEL 58.68					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'	Q/s	H"	Q	(NOTE ANY CHANGES IN OBSERVERS)
1123		203	3		103.76			45.08		40"	412	STEP III
1125		205	5		104.62			45.94				SAND @ 3.21 16ppm Q↑
1128		208	8		105.36			46.68				
1130		210	10		105.69			47.01				Q↑
1135		215	15		106.34			47.66				
1140		220	20		106.78			48.10				11:43 START SAND TESTER
1145		225	25		107.15			48.47				
1150		230	30		107.55			48.87				Q↑
1155		235	35		107.83			49.15				SNAZA 58.05 @ 1146
1200		240	40		108.08			49.40				WATSON 50.59 @ 1154
1210		250	50		108.62			49.94				SNAZA 280' from PMW
1220		260	60		109.02			50.34	8.25			1.3 ppm
1240		280	80		109.84			51.16				Q↑ @ 1239
1259		299	99		110.44			51.76	7.95			TEST 0.05/10min = 2.6 ppm
1300												
1303		303	3		117.34			58.66		60	505	STEP IV
1305		305	5		118.14			59.46				
1307		307	7		118.59			59.91				30 PSI BEHIND VALVE
1310		310	10		119.13			60.45		62"	513	Q↑
1315		315	15		120.32			61.64				0.2/10min START 2 MIN AFTER STEP ↑
1320		320	20		120.92			62.24				
1325		325	25		121.41			62.73				Q↑
1330		330	30		121.86			63.18				
1335		335	35		122.21			63.53				
1340		340	40		122.50			63.82				Q↑
1350		350	50		123.14			64.46	7.95			SNAZA 58.83 @ 1343 WATSON 50.62 @ 1351
1400		360	60		123.64			64.96	7.90			0.1/25min 2 ppm
1420		380	80		124.63			65.95	7.78			
1440		400	100		125.38			66.70	7.70			SNAZA 58.45 @ 14:31
												Test
												42" @ 40 PSI 1300 rpm

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Piccolo Main
(PUMPING) / OBSERVATION WELL
(PUMPING) / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6" X 4" ORIFICE
HOW WL's MEASURED Solnist 300' sounder
PUMPED WELL NO. Piccolo Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL

M.P. for WL's PVC stilling well elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26JAN91 time 0900
PUMP OFF: date 29JAN91 time 0900

TIME t = at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 56.91					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'	Q/s	H"	Q	(NOTE ANY CHANGES IN OBSERVERS)
0830					56.91					43"	427	
0901		1			82.90			25.99				
		2			86.54			29.63				
		3			88.40			31.49				
		4			89.83			32.92				Q↑
		5			91.06			34.15				
		6			91.96			35.05				
		7			92.70			35.79				
		8			93.40			36.49				Q↑
		9			94.10			37.19				
		10			94.70			37.79				
		12			95.65			38.74				Q↓
		14			96.56			39.65				
		16			97.34			40.43				
		18			97.86			40.95				
0920		20			98.54			41.63				
0925		25			99.42			42.51				Q↑
0930		30			100.39			43.48				
0935		35			101.18			44.27				0.5/25 MIN = 10.6 ppm
0940		40			101.89			44.98				Q↑
0945		45			102.50			45.59				START SAND TEST
0950		50			103.07			46.16				
1000		60			104.10			47.19				Q↑ 50 PSI on VALVE
1010		70			105.01			48.10				
1020		80			105.74			48.83				SAND 0.1 mL/35 MIN 1.5 ppm Q↑
1030		90			106.48			49.57				
1040		100			107.08			50.17				
1100		120			108.20			51.29				
1120		140			109.17			52.26				Q↑ 42¾ → 43"
1140		160			109.99			53.08				
1200		180			110.74			53.83				Q↑
1230		210			111.75			54.84				0.1 mL/140 ≤ 1 ppm
1300		240			112.66			55.75				
1330		270			113.48			56.57		42¾		
1400		300			114.17			57.26		43"		Q↑ @ 1415
1430		330			114.87			57.96				SAND 0.05 mL/90 MIN 0.3 ppm
1500		360			115.43			58.52				
1530		390			115.94			59.03				Q↑
1630		450			117.06			60.15				
1730		510			119.93			61.02				Q↑

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Picollo Main Well
(PUMPING) / OBSERVATION WELL
(PUMPING) / RECOVERY DATA
PAGE 2 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6"x4" Orifice Weir
HOW WL's MEASURED Solinst 300'
PUMPED WELL NO. Picollo Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL

M.P. for WL's PVC Stilling elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26 JAN 91 time 0900
PUMP OFF: date 29 JAN 91 time 0900

TIME t=510 at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 56.91					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'		H	Q	(NOTE ANY CHANGES IN OBSERVERS)
1830		570			118.73			61.82		43"	427	Q↑
1930		630			119.40			62.49				
2030		690			119.99			63.08				
2130	30/12	750			120.56			63.65				
2230	30/13	810			121.05			64.14				E.E.
0030	30/15	930			121.98			65.07		43½"		Q↓
0230	30/17	1050			122.64			65.73				
0500	0/20	1200			123.48			66.57		43"		
0800	0/23	1380			124.04			67.13				Q↑ 42¾ → 43"
1102		1562			124.52			67.61				Q↑ 42¾ → 43" MJ
1400		1740			124.80			67.89				Q↑
1710		1930			125.25			68.34		43"		
2000		2100			125.60			68.69		43"		
2301		2281			125.93			69.02		43"		
JAN 0210		2470			126.27			69.36		43¼		Q↓ ¼"
0620		2720			126.50			69.59		43		
1030	30/49	2970			126.53			69.62		43		Q↑ P.F.
1430	30/53	3210			126.47			69.56		43		Q↑ ¼" @ 13:30 P.F
1830	30/57	3450			126.50			69.59		43		Q↓ ¼" @ 17:15 P.F
2230	30/61	3690			126.96			70.05		43		Q↓ 43¼-43½ @ 2130 → 43 E.E
JAN 0400	00/67	4020			127.20			70.29		43		
0848		4308			127.33			70.42				

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Piccolo M. W.
PUMPING / ~~OBSERVATION~~ WELL
~~PUMPING~~ / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6"x4" ORIFICE
HOW WL's MEASURED SOLINST 150' SOUNDER
PUMPED WELL NO. Piccolo Main Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 36½ ft

M.P. for WL's TOP 2" CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26JAN91 time 0900
PUMP OFF: date 29JAN91 time 0900

TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 56.90					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
0830					56.98							
0958					56.90			0				
0900		0										
0901		1			59.90			3.00				
		2			61.92			5.02				
		3			63.25			6.35				
		4			64.24			7.34				
		5			65.07			8.17				
		6			65.73			8.83				
		7			66.30			9.40				
		8			66.89			9.99				
		9			67.29			10.39				
		10			67.73			10.83				
		12			68.52			11.62				
		14			69.17			12.27				
		16			69.76			12.86				
		18			70.30			13.40				
		20			70.78			13.88				
		25			71.78			14.88				
		30			72.64			15.74				
		35			73.38			16.48				
		40			74.04			17.14				
		45			74.65			17.75				
		50			75.15			18.25				
1000		60			76.12			19.22				
1010		70			76.96			20.06				
1020		80			77.70			20.80				
1030		90			78.36			21.46				
1040		100			78.97			22.07				
1102		122			80.15			23.25				E.E.
1121		141			81.03			24.13				
1142		162			81.87			24.96				
1202		182			82.57			25.66				
1231		211			83.52			26.62				
1302		242			84.38			27.48				
1332		272			85.13			28.23				
1402		302			85.79			28.89				
1432		332			86.42			29.52				
1502		362			86.97			30.07				
1527		391			87.45			30.55				

OIL-6

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Picollo Mon Well
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 2 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED Orifice Weir 6"x4"
HOW WL's MEASURED Solinst 150
PUMPED WELL NO. Picollo Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 361/2 ft

M.P. for WL's Top 2" casing elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26JAN91 time 0900
PUMP OFF: date 29 JAN 91 time 0900

TIME t = 392 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 56.90					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t / t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
1631		451			88.38			31.48				
1732		512			89.17			32.27				
1832		572			89.85			32.95				
1932		632			90.46			33.56				
2032		692			91.00			34.10				
2132		752			91.45			34.55				
2232		812			91.92			35.02				E.E.
0032		932			92.69			35.79				
0232		1052			93.28			36.38				
0502		1202			93.92			37.02				
0802		1382			94.49			37.59				
1101		1561			94.90			38.00				MW
1358		1738			95.21			38.31				
1708		1928			95.57			38.67				
2002		2102			95.86			38.96				
2300		2280			96.08			39.18				
0211		2471			96.35			39.45				
0622		2722			96.56			39.66				
1032		2972			96.66			39.76				P.F.
1431		3211			96.66			39.76				
1832		3452			96.85			39.95				
2232		3692			96.98			40.08				E.E.
0403		4023			97.13			40.23				
0845		4305			97.17			40.27				

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL SNAZA'S WELL
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED ORIFICE WEIR 6" x 4"
HOW WL's MEASURED ACTAT SOUNDER
PUMPED WELL NO. PICOLLO SCHOOL WELL
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 280 Ft

M.P. for WL's TOP 6" CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date JAN 26, 1991 time 09:00 AM
PUMP OFF: date 29JAN91 time 0900

TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 57.52					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or s'		H	Q	(NOTE ANY CHANGES IN OBSERVERS)
0830					57.52					43"	427	
0901		1			57.53			0.01				
0902		2			57.48			-0.04				
0903		3			57.47			-0.05				
0904		4			57.46			-0.06				
0905		5			57.44			-0.08				
0906		6			57.49			-0.03				
0907		7			57.49			-0.03				
0908		8			57.47			-0.05				
0909		9			57.42			-0.10				
0910		10			57.40			-0.12				
0912		12			57.41			-0.11				
0914		14			57.41			-0.11				
0916		16			57.41			-0.11				
0918		18			57.41			-0.11				
0920		20			57.41			-0.11				
0925		25			57.43			-0.09				
0930		30			57.46			-0.06				
0935		35			57.48			-0.04				
0940		40			57.52			0.00				
0945		45			57.55			0.03				
0950		50			57.59			0.07				
1000		60			57.66			0.14				
1010		70			57.72			0.20				
1020		80			57.78			0.26				
1030		90			57.83			0.31				
1040		100			57.88			0.36				
1059		119			57.97			0.45				
1129		149			58.08			0.56				
1158		178			58.17			0.65				
1234		214			58.26			0.74				
1306		246			58.32			0.80				
1335		275			58.37			0.85				
1406		306			58.41			0.89				
1436		336			58.46			0.94				
1506		366			58.51			0.99				
1537		397			58.52			1.00				
1634		454			58.57			1.05				
1735		515			58.60			1.08				
1835		575			58.68			1.16				

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL SNAZA'S WELL
PUMPING (OBSERVATION WELL)
(PUMPING) RECOVERY DATA
PAGE 2 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED ORIFICE WEIR 6" X 4"
HOW WL's MEASURED ACTAT SOUNDER
PUMPED WELL NO. PICOLLO SCHOOL WELL
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 280 ft

M.P. for WL's TOP OF CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date JAN26.1991 time 09:00 AM
PUMP OFF: date 29JAN91 time 0900

TIME t = 575 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 57.52					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
1935		635			58.70			1.18				
2035		695			58.73			1.21				
2135		755			58.75			1.23				
2236		816			58.78			1.26				E.E.
0036		936			58.80			1.28				
0237		1057			58.85			1.33				
0507		1207			58.88			1.36				
0807		1387			58.91			1.39				
1058		1558			58.98			1.46				MW
1355		1735			59.01			1.49				
1705		1925			59.05			1.53				
2005		2105			59.10			1.58				
2258		2278			59.11			1.59				
0214		2474			59.13			1.61				
0625		2725			59.12			1.60				
1036		2976			59.14			1.62				P.F.
1434		3214			59.15			1.63				
1835		3455			59.18			1.66				
2235		3695			59.19			1.67				E.E.
0406		4026			59.26			1.74				

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL WATSON'S WELL
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED ORIFICE WEIR 6" x 4"
HOW WL's MEASURED POWERS SOUNDER
PUMPED WELL NO. PICCOLO WELL
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 680 Ft

M.P. for WL's TOP OF CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date JAN 26 1991 time 0900
PUMP OFF: date 29 JAN 91 time 0900

TIME t= at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 50.54					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
0830					50.54							
0900	0	0			50.54			0				DCB measured @ bottom at 50' Mark
0901		1			50.54			0				
0902		2			50.53			-0.01				
0903		3			50.53			-0.01				
0904		4			50.55			0.01				
0905		5			50.58			0.03				
0906		6			50.55			0.01				
0907		7			50.55			0.01				
0908		8			50.55			0.01				
0909		9			50.55			0.01				
0910		10			50.55			0.01				
0912		12			50.54			0.00				
0914		14			50.54			0.00				
0916		16			50.54			0.00				
0918		18			50.53			-0.01				
0920		20			50.54			0.00				
0924		24			50.54			0.00				
0928		28			50.54			0.00				
0932		32			50.53			-0.01				
0936		36			50.53			-0.01				
0940		40			50.54			0.00				
0945		45			50.54			0.00				
0950		50			50.54			0.00				
1000	1	60			50.55			0.01				
1034		94			50.52			-0.02				MCW middle 50' mark
1105		125			50.52			-0.02				
1135		155			50.53			-0.01				
1205		185			50.55			0.01				
1242		222			50.56			0.02				
1313		253			50.58			0.04				
1343		283			50.59			0.05				
1413		313			50.60			0.06				
1443		343			50.61			0.07				
1513		373			50.62			0.08				
1545		405			50.63			0.09				
1641		461			50.63			0.09				
1741		521			50.65			0.11				
1842		582			50.72			0.18				
1941		641			50.67			0.13				

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL WATSON'S WELL
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 2 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED ORIFICE WEIR 6" X 4"
HOW WL's MEASURED POWER SOUNDER
PUMPED WELL NO. PICCOLO
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 680 Ft

M.P. for WL's TOP OF CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date JAN 26, 1991 time 09:00 AM
PUMP OFF: date 29JAN91 time 0900

TIME t = 641 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 50.54					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
2041		701			50.69			0.15				
2140		760			50.70			0.16				
2243		823			50.69			0.15				
0044		944			50.71			0.17				
0246		1066			50.71			0.17				
0515		1215			50.73			0.19				
0815		1395			50.74			0.20				
1053		1553			50.73			0.19				mw
1350		1730			50.74			0.20				
1655		1915			50.77			0.23				
2010		2110			50.79			0.25				
2252		2272			50.80			0.26				
0220		2480			50.80			0.26				
0630		2730			50.83			0.29				
1044		2984			50.83			0.29				P.F.
1443		3223			50.83			0.29				
1842		3462			50.88			0.34				
2242		3702			50.89			0.35				E.E.
0414		4034			50.88			0.34				

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Piccolo Main Well
(PUMPING) / OBSERVATION WELL
PUMPING / (RECOVERY DATA)
PAGE 1 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6" x 4" Orifice Weir
HOW WL's MEASURED Solinst 300' sounder
PUMPED WELL NO.
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL

M.P. for WL's PVC stilling well elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26 JAN 91 time 0900
PUMP OFF: date 29 JAN 91 time 0900

TIME t = 4320 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 56.91					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or (S')			Q	(NOTE ANY CHANGES IN OBSERVERS)
0858		4318			127.29							
	01 / 72	4321	1	4321	96.43			39.52				
		4322	2	2161	94.80			37.89				
		4323	3	1441	93.26			36.35				
		4324	4	1081	91.78			34.87				
		4325	5	865	90.55			33.64				
		4326	6	721	89.62			32.71				
		4327	7	618	88.81			31.90				
		4328	8	541	88.14			31.23				
		4329	9	481	87.54			30.63				
0910		4330	10	433	86.95			30.04				
		4332	12	361	86.00			29.09				
		4334	14	310	85.32			28.41				
		4336	16	271	84.64			27.73				
		4338	18	241	84.03			27.12				
0920		4340	20	217	83.46			26.55				
0925		4345	25	174	82.36			25.45				
0930		4350	30	145	81.41			24.50				
0935		4355	35	124	80.62			23.71				
		4360	40	109	79.92			23.01				
		4365	45	97	79.26			22.35				
		4370	50	87	78.69			21.78				
1000	0 / 73	4380	60	73	77.67			20.76				
1010		4390	70	63	76.78			19.87				
1020		4400	80	55	75.99			19.08				
1030		4410	90	49	75.28			18.37				
1040		4420	100	44	74.64			17.73				
1100	0 / 74	4440	120	37	73.49			16.58				
1120	20 / 74	4460	140	32	72.50			15.59				
1140	40 / 74	4480	160	28	71.62			14.71				
1200	0 / 75	4500	180	25	70.83			13.92				
1230	30 / 75	4530	210	22	69.78			12.87				
1300	0 / 76	4560	240	19	68.88			11.97				
1330	30 / 76	4590	270	17	68.07			11.16				
1400	00 / 77	4620	300	15	67.33			10.42				P.F.
1430	30 / 77	4650	330	14	66.68			9.77				
1500	0 / 78	4680	360	13	66.09			9.18				
1530	30 / 78	4710	390	12	65.55			8.64				
1630	30 / 79	4770	450	10.5	64.56			7.65				
												Pump Off

UTIL-16

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Picollo Main Well
(PUMPING) / OBSERVATION WELL
PUMPING / (RECOVERY DATA)
PAGE 2 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6" X 4" Orifice Weir
HOW WL's MEASURED Solinst 300' Sounder
PUMPED WELL NO.
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL

M.P. for WL's PVC Stilling Well elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26 JAN 91 time 0900
PUMP OFF: date 29 JAN 91 time 0900

TIME t = 4320 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 56.91					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
1730	30/80	4830	510	9.5	63.73			6.82				
1856		4918	598	8.2	62.66			5.75				
2030		5010	690	7.2	61.78			4.87				
2200		5100	780	6.5	61.08			4.17				
2400		5220	900	5.8	60.31			3.40				
0320		5420	1100	4.9	59.20			2.29				
0703		5643	1323	4.3	58.30			1.39				1.5 ft mp
1430		6090	1770	3.4	57.14			0.23				P.P.
2000		6420	2100	3.1	56.60			-0.31				A.T.
0730		7110	2790	2.5	55.94			-0.97				E.E.

UTIL-16

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Picollo Mon Well
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6" x 4" Orifice Weir
HOW WL's MEASURED Solinst 150' Sounder
PUMPED WELL NO. Picollo Main Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 36.5'

M.P. for WL's Top 2" casing elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26 JAN 91 time 0900
PUMP OFF: date 29 JAN 91 time 0900

TIME t = 4320 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 56.90					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
0858		4318			97.20							
0900		4320	0									
		4321	1	4321	93.72			36.82				
		4322	2	2161	91.57			34.67				
		4323	3	1461	90.24			33.34				
		4324	4	1061	89.29			32.39				
		4325	5	841	89.45	88.45		32.55	31.55			
		4326	6	721	87.77			30.87				
		4327	7	618	87.10			30.20				
		4328	8	541	86.55			29.65				
		4329	9	481	86.08			29.18				
		4330	10	433	85.63			28.73				
		4332	12	361	84.81			27.91				
		4334	14	310	84.14			27.24				
		4336	16	271	83.57			26.67				
		4338	18	241	83.07			26.17				
		4340	20	217	82.56			25.66				
		4345	25	174	81.53			24.63				
		4350	30	145	80.68			23.78				
		4355	35	125	79.81			22.91				
		4360	40	109	79.22			22.32				
		4365	45	97	78.62			21.72				
		4370	50	87	78.07			21.17				
1000		4380	60	73	77.08			20.18				
1011		4391	71	62	76.16			19.26				
1021		4401	81	54	75.40			18.50				
1031		4411	91	49	74.72			17.82				
1041		4421	101	44	74.10			17.20				
1101		4441	121	37	73.01			16.11				
1121		4461	141	32	72.04			15.14				
1141		4481	161	28	71.19			14.29				
1201		4501	181	25	70.42			13.52				
1231		4531	211	21	69.42			12.52				
1301		4561	241	19	68.50			11.60				
1331		4591	271	17	67.74			10.84				
1401		4621	301	15	67.04			10.14				
1431		4651	331	14	66.40			9.50				
1501		4681	361	13	65.83			8.93				
1531		4711	391	12	65.30			8.40				
1537		4717	397	11.9	64.35			7.45				Manual WL:

UTIL-16

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Piccolo Mon Well
PUMPING (OBSERVATION WELL)
PUMPING (RECOVERY DATA)
PAGE 2 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6"x4" Orifice Weir
HOW WL's MEASURED Solinst 150' Sounder
PUMPED WELL NO. Piccolo Main Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 36.5'

M.P. for WL's Top 2" casing elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26JAN91 time 0900
PUMP OFF: date 29JAN91 time 0900

TIME t = 4320 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 56.90					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or (S')			Q	(NOTE ANY CHANGES IN OBSERVERS)
1731		4831	511	9.5	63.62			6.72				
1900		4920	600	8.2	62.56			5.66				
2031		5011	691	7.2	61.70			4.80				
2158		5098	778	6.5	61.03			4.13				
0001		5221	901	5.8	60.23			3.33				92% recovery
0321		5421	1101	4.9	59.18			2.28				
0704		5644	1324	4.3	58.30			1.40				mp = 1.8'
1431		6091	1771	3.4	57.20			0.30				P.F.
2003		6423	2103	3.1	56.69			-0.21				A.T.
0735		7115	2795	2.5	56.02			-0.88				E.E

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL SNAZA WELL
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6" X 4" Orifice
HOW WL's MEASURED ACTAT Electric Sounder
PUMPED WELL NO. Piccolo Main Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 280 ft

M.P. for WL's TOP 6" CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26JAN91 time 0900
PUMP OFF: date 29JAN 91 time 0900

TIME t = 4320 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 57.52					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
W 29 0858		4318			59.23			1.71				
0901		4321	1	4321	59.28			1.76				
0902		4322	2	2161	59.28			1.76				
0903		4323	3	1441	59.30			1.78				
0904		4324	4	1081	59.31			1.79				
0905		4325	5	865	59.32			1.80				
0906		4326	6	721	59.33			1.81				
0907		4327	7	618	59.33			1.81				
0908		4328	8	541	59.34			1.82				
0909		4329	9	481	59.34			1.82				
0910		4330	10	433	59.34			1.82				
0912		4332	12	361	59.34			1.82				
0914		4334	14	310	59.34			1.82				
0916		4336	16	271	59.34			1.82				
0918		4338	18	241	59.34			1.82				
0920		4340	20	217	59.34			1.82				
0925		4345	25	174	59.31			1.79				
0930		4350	30	145	59.28			1.76				
0935		4355	35	124	59.28			1.76				
0940		4360	40	109	59.25			1.73				
0945		4345	45	97	59.22			1.70				
0950		4370	50	87	59.19			1.67				
1000		4380	60	73	59.13			1.61				
1010		4390	70	63	59.07			1.55				
1020		4400	80	55	59.03			1.51				
1030		4410	90	49	58.99			1.47				
1040		4420	100	44	58.94			1.42				
1100		4440	120	37	58.87			1.35				
1124		4464	144	31	58.78			1.26				
1144		4484	164	27	58.72			1.20				
1200		4500	180	25	58.69			1.17				
1230		4530	210	22	58.62			1.10				
1305		4565	245	19	58.54			1.02				
1330		4590	270	17	58.51			0.99				
1404		4624	304	15	58.44			0.92				
1430		4650	330	14	58.40			0.88				
1500		4680	360	13	58.36			0.84				
1530		4710	390	12	58.33			0.81				
1634		4774	454	10.5	58.27			0.75				E.E.

UTIL-16

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL SNAZA WELL
PUMPING (OBSERVATION WELL)
PUMPING (RECOVERY DATA)
PAGE 2 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED 6" X 4" ORIFICE
M.P. for WL's TOP 6" CASING elev. ____
HOW WL's MEASURED ACTAT ELECTRIC SOUNDER
DEPTH of PUMP/AIRLINE ____ wrt ____
PUMPED WELL NO. PICOLLO MAIN WELL
% SUBMERGENCE: initial ____ ; pumping ____
RADIUS of PUMPED WELL ____
PUMP ON: date 26 JAN 91 time 0900
DISTANCE from PUMPED WELL 280 ft
PUMP OFF: date 29 JAN 91 time 0900

TIME t = 4320 at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 57.52					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or (S')			Q	(NOTE ANY CHANGES IN OBSERVERS)
1724		4824	504	9.6	58.23			0.71				
1902		4922	602	8.2	58.17			0.65				
2034		5014	694	7.2	58.09			0.57				
2203		5103	783	6.5	58.05			0.53				
0003		5223	903	5.8	58.00			0.48				
0325		5425	1105	4.9	57.94			0.42				
0709		5649	1329	4.3	57.88			0.36				hgt mp = 0.80
1435		6095	1775	3.4	57.76			0.24				P.F.
2006		6426	2106	3.1	57.73			0.21				A.T
0740		7120	2800	2.5	57.67			0.15				E.E.

GTL-16

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Watson Well
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6"x4" Orifice
HOW WL's MEASURED Powers Sounder
PUMPED WELL NO. Picollo Main Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 680'

M.P. for WL's Top 6" Casing elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26 JAN 91 time 0900
PUMP OFF: date 29 JAN 91 time 6900

TIME t = 4320 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 50.54 (50.89 1/29/90)					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t / t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or s'			Q	(NOTE ANY CHANGES IN OBSERVERS)
0901		4321	1	4321	50.89	MEASURE TO MIDDLE 50' MAP		0.35				
		4322	2	2161	50.89			↓				
		4323	3	1441	50.89			↓				
		4324	4	1081	50.89			↓				
		4325	5	865	50.89			0.35				
		4326	6	721	50.88			0.34				
		4327	7	618	50.88			0.34				
		4328	8	541	50.87			0.33				
		4329	9	481	50.87			↓				
0910		4330	10	433	50.87			↓				
		4332	12	361	50.87			0.33				
		4334	14	310	50.88			0.34				
		4336	16	271	50.87			0.33				
		4338	18	241	50.87			↓				
0920		4340	20	217	50.87			↓				
		4345	25	174	50.87			↓				
		4350	30	145	50.87			↓				
		4355	35	124	50.87			↓				
		4360	40	109	50.87			0.33				
		4365	45	97	50.88			0.34				
0950		4370	50	87	50.88			0.34				↑ +
1000		4380	60	73	50.92			0.38				↓ − Pump?
1010		4390	70	63	50.88			0.34				↑ +
1023		4403	83	53	51.02			0.48				Pump came on
1033		4413	93	47	50.88			0.34				
1040		4420	100	44	50.88			0.34				
1106		4446	126	35	50.88			0.34				
1130		4470	150	30	50.89			0.35				
1140		4480	160	28	50.85			0.31				
1207		4507	187	24	50.85			0.31				
1236		4536	216	21	50.82			0.28				
1312		4572	252	18	50.84			0.30				
1337		4597	277	17	50.81			0.27				
1410		4630	310	15	50.81			0.27				
1436		4656	336	14	50.81			0.27				
1506		4686	366	13	50.80			0.26				
1536		4716	396	12	50.79			0.25				
1640		4780	460	10	50.80			0.26				E.E.
1740												MW

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Watson Well
PUMPING (OBSERVATION WELL)
PUMPING/(RECOVERY DATA)
PAGE 2 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED 6" x 4" Orifice
HOW WL's MEASURED Powers Sounder
PUMPED WELL NO. Piccolo Main Well
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 680ft

M.P. for WL's Top 6" Casing elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 26JAN91 time 0900
PUMP OFF: date 29Jan91 time 0900

TIME t = 4320 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 50.54					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
1740		4840	520	9.3	50.79			0.25				
1907		4927	607	8.1	50.77			0.23				
2039		5019	699	7.2	50.76			0.22				
2208		5108	788	6.5	50.75			0.21				
0008		5228	908	5.8	50.74			0.20				
0330		5430	1130	4.9	50.74			0.20				
0714		5654	1334	4.3	50.73			0.19				Mp height = 0.8
1441		6101	1781	3.4	50.72			0.18				P.F.
2014		6434	2114	3.0	50.75			0.21				A.T
0755		7135	2815	2.5	50.73			0.19				E.E

APPENDIX III
VIDEO SURVEY LOG

welenco
VIDEO SURVEY REPORT

(800) 445-9914

● Bakersfield ● Salinas ● Claremont ● Arizona ● Sacramento ● Washington ● Nevada

Customer LAWR EXPLORATORY DRILLING
Address
City State Zip
Request By Cust. Order No.
Copy To
Reason for Survey FINAL INSPECTION

Job No. 17226 Run No. 1
Well No. Date 2-1-91
Location PICOLLO SCHOOL WELL
Zero Datum G.L.
Survey Completed By DAVE LOCKERBIE

DEPTH	REMARKS
0	12" STEEL
53	FLUID TOP MINOR OIL MURKY
67	CLEARING PARTIAL DEBRIS
127	SCREEN TOP 90 SLOT STAINLESS (JOHNSON)
146	CONNECTION
167	CONNECTION
186	CONNECTION
193	FOGGY
206	CONNECTION
226	BOTTOM
247	TOP OF PEARS
266	CONNECTION
287	CONNECTION
306	CONNECTION
326	CONNECTION
346	BOTTOM
347	MINOR ENCRUSTACION
354	BOTTOM SOFT FILL

CASING CONDITION:

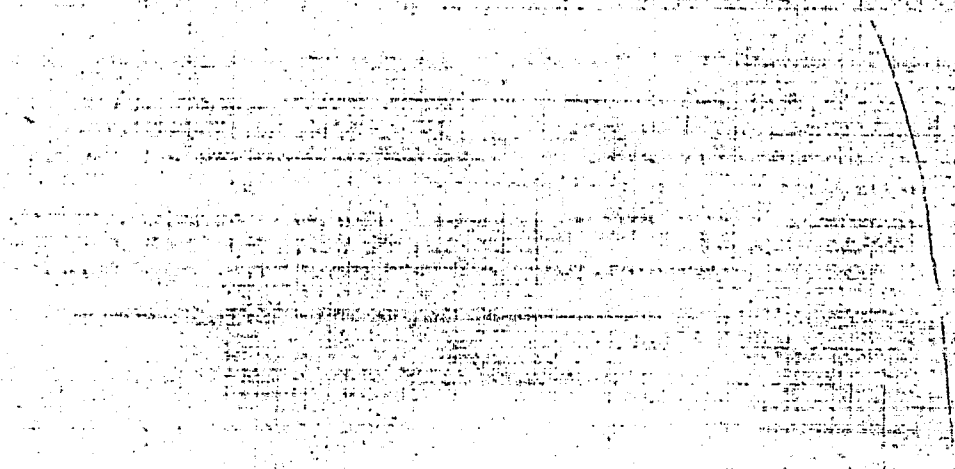
at Surface Reduces to at : at : at

Diameter Reference: ☐ Caliper Survey ☐ Estimate from TV/Photo Survey ☐ Well Records

Corrosion/Incrustation Build-up

NOTE
Video tapes of television surveys will be erased after one year from the date of the survey unless otherwise arranged.

APPENDIX IV
BID PROPOSAL



BID PROPOSAL

ITEM	APPROX QUAN-TITY	DESCRIPTION OF ITEM WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICES	TOTAL
		MOBILIZATION AND DEMOBILIZATION		
1.	2	Mobilization and Demobilization including all materials, labor, equipment for completion of two test wells as described in Specifications for the lump sum price of One thousand eight hundred per well.	$1,800.00	$3,600.00
2.	3	Mobilization and Demobilization including all materials, labor, equipment for completion of three municipal water wells as described in Specifications for the lump sum price of Two thousand four hundred and fifty dollars per well.	2,450.00	7,350.00
		MOUNT ROSE TEST DRILLING		
1.	1200 LF	Drill minimum 8-inch diameter pilot bore, Mount Rose locations, approximately 600 foot per test hole at Twelve dollars per lineal foot.	12.00	14,400.00 7,200.00
2.	2	Geophysical Logs of pilot bores for the price of One thousand four hundred forty per log	1,440.00	2,880.00
3.	800 ft.	Furnish and install 2-inch diameter slotted steel pipe estimate at 400 feet per test hole at Three dollars and sixty cents per foot.	3.60	2,880.00
4.	400 ft.	Furnish and install 2-inch diameter steel pipe estimated at 200 feet per test hole at One dollar and eighty cents per foot.	1.80	720.00
5.	15 yds^3	Furnish and install gravel pack, estimated at 7.5yds^3 per test hole at One hundred one & fifty-seven cents per yd^3	101.57	1,523.55

6.	200 ft.	Furnish and install grout sanitary seal estimated at 100 feet per test well at Eleven dollars & Twenty-five cents per foot.	$ 11.25	$ 2,250.00
7.	20 hrs.	Furnish and install necessary equipment for air-development of 2-inch diameter monitoring wells estimated at 10 hours per test well at Two hundred twenty dollars per hour.	220.00	4,400.00
		MARVIN PICOLLO SCHOOL LOCATION, PRODUCTION WELL		
1.	105 ft.	Drill 32-inch MINIMUM diameter conductor casing borehole, PICOLLO SCHOOL location, approximately 105 feet at One hundred twenty-seven dollars per lineal ft.	127.00	13,335.00
2.	100 ft.	Furnish and install blank 24-inch diameter conductor casing, PICOLLO SCHOOL approximately 100 feet Forty-five dollars per lineal ft.	45.00	4,500.00
3.	100 ft.	Furnish and install sanitary grout seal PICOLLO SCHOOL location approximately 100 feet at Thirty-eight dollars per lineal ft.	38.00	3,800.00
4.	250 ft.	Drill 22-inch minimum diameter production casing borehole, PICOLLO SCHOOL, Approximately 250 ft. at Sixty dollars per lineal ft.	60.00	15,000.00
5.	150 ft.	Furnish and install 12-inch diameter blank production casing, PICOLLO SCHOOL location, approximately 150 feet at Twenty-two dollars per lineal ft.	22.00	3,300.00

BID PROPOSAL

ITEM	APPROX QUANTITY	DESCRIPTION OF ITEM WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL
6.	200 ft.	Furnish and install 12-inch diameter wire-wrap well screen, PICOLLO SCHOOL location, approximately 200 feet at Fifty-three dollars per lineal ft.	$ 53.00	$10,600.00
7.	200 ft.	Furnish and install 1-inch diameter water-level sounding tube, PICOLLO SCHOOL location, approximately 200 ft. at One dollar & twenty cents per lineal ft.	1.20	240.00
8.	35 yds^3	Furnish and install design gravel pack, PICOLLO SCHOOL location, estimated 35 yds^3 at One hundred twenty dollars per yd^3	120.00	4,200.00
9.	1 ea.	Furnish and install casing clamp and doughnut ring seal, PICOLLO SCHOOL location, for the lump sum price of Five hundred twenty dollars each.	520.00	520.00
10.	100 hrs.	Development by bailing and swabbing, PICOLLO SCHOOL location, estimated 100 hours at Two hundred twenty dollars per hour	220.00	22,000.00
11.	100 hrs.	Furnish, install, operate and remove necessary equipment, PICOLLO SCHOOL location, including discharge piping for development pumping estimated 100 hrs. at One hundred twenty per hour.	120.00	12,000 00 1,200.00
12.	90 hrs.	Furnish, install, operate and remove necessary equipment, PICOLLO SCHOOL location, for test pumping at estimate 90 hours at One hundred twenty dollars per hour.	120.00	10,800.00
13.	1 ea.	Well disinfection and capping, at the lump sum price of Eight hundred dollars	800.00	800.00

14.	1 ea.	VHS video log of completed production well PICOLLO SCHOOL at the lump sum price of Four hundred fifty dollars per log.	$ 450.00	$ 450.00

MOUNT ROSE LOCATION, PRODUCTION WELLS

1.	350 ft.	Drill 8-inch minimum diameter pilot hole at MT. ROSE, Well No. 2 location, approximately 350 feet at Twelve dollars per lineal ft.	12.00	4,200.00
2.	1 ea.	Geophysical log of pilot bore for the price of One thousand four hundred forty each.	1,440.00	1,440.00
3.	210 ft.	Drill 32-inch MINIMUM diameter conductor casing borehole, MOUNT ROSE locations, approximately 105 feet at each site at One hundred twenty seven dollars per lineal ft.	127.00	26,670.00
4.	200 ft.	Furnish and install blank 24-inch diameter conductor casing, MOUNT ROSE locations approximately 100 feet per site at Forty-five dollars per lineal ft.	45.00	9,000.00
5.	200 ft.	Furnish and install sanitary grout seal MOUNT ROSE locations approximately 100 feet per site at Thirty-eight dollars per lineal ft.	38.00	7,600.00
6.	750 ft.	Drill 22-inch minimum diameter production casing borehole, MOUNT ROSE locations, Approximately 500 ft. at Location No. 1 and 250 feet at Location No. 2 at Seventy-eight dollars per lineal ft.	78.00	58,500.00

BID PROPOSAL

ITEM	APPROX QUANTITY	DESCRIPTION OF ITEM WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL
7.	500 ft.	Furnish and install 12-inch diameter blank production casing, MOUNT ROSE locations, approximately 350 feet at Location No. 1 and 150 feet at Location No. 2 at Twenty-two dollars per lineal ft.	$ 22.00	$11,000.00
8.	450 ft.	Furnish and install 12-inch diameter wire-wrap well screen, MOUNT ROSE locations, approximately 250 feet at Location No. 1 and 200 feet at Location No. 2 at Fifty-three dollars per lineal ft.	53.00	23,850.00
9.	500 ft.	Furnish and install 1-inch diameter water-level sounding tube, MOUNT ROSE locations, approximately 400 ft. at Location No. 1 and 150 feet at Location No. 2 at One dollar & twenty cents per lineal ft.	1.20	600.00
10.	95 yds^3	Furnish and install design gravel pack, MOUNT ROSE locations, estimated 95 yds^3 at One hundred one & fifty-seven cents per yd^3	101.57	9,649.15
11.	2 ea.	Furnish and install casing clamp and doughnut ring seal, MOUNT ROSE locations for the price of Five hundred twenty dollars each.	520.00	1,040.00
12.	150 hrs.	Development by bailing and swabbing, MOUNT ROSE locations, estimated 150 hours at Two hundred twenty dollars per hour	220.00	33,000.00

13.	150 hrs.	Furnish, install, operate and remove necessary equipment, MOUNT ROSE locations, including discharge piping for development pumping. Estimated 150 hours at One hundred twenty dollars per hour.	$120.00	18,000.00
14.	160 hrs.	Furnish, install, operate and remove necessary equipment, MOUNT ROSE locations, for test pumping at One hundred twenty dollars per hour.	120.00	19,200.00
15.	2 ea.	Well disinfection and capping at the lump sum price of Eight hundred dollars	800.00	1600 00 800.00
16.	2 ea.	VHS video logs of completed production wells MOUNT ROSE Location for the lump sum price of Four hundred dollars per log.	400.00	800 00 400.00

TOTAL BID	WRITTEN IN WORDS	TOTAL
_____complete.	Three hundred forty-eight thousand, four hundred ninety-seven & seventy cents	367,697.70 $348,497.70

Name, Address and Telephone Number of Bidding Company

Lang Exploratory Drilling

2286 West 1500 South

Salt Lake City, Utah 84104

(801) 973-6667

Authorized Signature Representing Bidding Company

Randy Mayer

Contract Manager

Title