Analysis of Pumping Test Data
Picollo School Well
Washoe County, Nevada

April 1, 1991

Hydro-Search, Inc.

HYDROLOGISTS - GEOLOGISTS - ENGINEERS

Hydro-Search, Inc.
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HYDROLOGISTS - GEOLOGISTS - ENGINEERS
Phone (702) 829-1200 FAX (702) 829-1243
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April 1, 1991
(10151\widmer.ltr)

Mr. Michael Widmer
Hydrologist
Washoe County Utility Division
1195-B Corporate Boulevard
P.O. Box 11130
Reno, Nevada 89520

Dear Mr. Widmer:

Hydro-Search, Inc. (HSI) is pleased to submit our analysis of the pumping test data from the Picollo School Production well, which includes projected impacts to the aquifer with time due to pumping.

We concluded that the aquifer system is semi-confined with grain size and productivity decreasing with depth. Considerable leakage from the upper portion of the aquifer to the lower portion can be expected over time, particularly close-in to the production well. Impacts to the shallow portion of the aquifer at distances of 1,000 to 2,000 feet are expected to be low.

We choose conservative T and S values for the deep portion of the aquifer based on drawdown response before recharge/leakage effects were encountered. Based on these values the Picollo School well is rated at 200 to 300 gpm production on a sustained yield basis.

If you have any questions or comments regarding this information please contact either myself or David Carlson at (702) 892-1200.

Very truly yours,

HYDRO-SEARCH, INC.

David A. King
Hydrogeologist

DAK:sem

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Prepared for:

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1195-B Corporate Boulevard
P.O. Box 11130
Reno, Nevada 89520

Prepared by:

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David A. King (for)
David E. Carlson
Hydrogeologist
Project Manager

David A. King
David A. King
Hydrogeologist
Registered Geologist #4434
(California)

TABLE OF CONTENTS

TABLES

FIGURES

TABLE OF CONTENTS Con't

APPENDICES

1.0 EXECUTIVE SUMMARY

1. Computer simulated drawdown response in the aquifer over time, due to pumping at the production well indicates 116 feet of drawdown in the pumping well after 5 years of continuous pumping at 350 gpm. A domestic well, completed in the upper aquifer 2,000 feet from the pumping well would have a pumping drawdown effect of less than 2 feet for the same 5 year period and pumping rate. HSI's experience with long-term monitoring of production pumping response is that actual, close-in response will be greater than projected due to deterioration in well efficiency and reduction in transmissivity, and distant response will be less than projected due to discontinuities in the aquifer.

2. The semi-horizontal regional alluvial material data indicates two potential ground-water flow systems. The response of water levels in the shallow domestic wells monitored during the testing program indicate that ground-water withdrawal from the deep aquifer system should not adversely effect the local domestic wells which tap the upper aquifer.

2.0 INTRODUCTION

This report presents results of test pumping the Picollo School Production Well for the Washoe County Utilities Division. The work was performed by Hydro-Search, Inc. (HSI) as authorized by Mr. Michael Widmer, Washoe County Utilities Division.

Primary objective of the work was to evaluate the water producing characteristics of the Picollo School Production Well and surrounding aquifer. In addition, impact analysis with projected water levels in the aquifer at various distances from the production well and pumping rates was examined.

3.0 GEOLOGIC/HYDROGEOLOGIC SETTING

The Production and monitoring wells completed in the Picollo School area are located near the base of the Thomas Creek/Whites Creek alluvial fan. Geologic logs of the completed production and monitor well indicate that the wells were completed in semi-horizontally layered sand and gravel with interbedded silty clay. The geologic log from the monitor well indicates that the alluvial material becomes finer-grained with depth. The upper 230 feet consists of coarse to medium-grained sand and gravel with silty clay. Below 230 feet the sediment grain size decreases to sandy clay, with local interbedded layers of sand and gravel. A geologic log the monitor well is summarized and included in Appendix A.

4.0 WELL CONSTRUCTION

The Picollo School Well is located in the NE 1/4 NE 1/4, Section 18, T.18N., R.20E. M.D.B.&M. approximately 300 feet west of the school, near the intersection of Caribou Road and Foothill Road in Washoe County, Nevada. The well was drilled, constructed, and tested during January and February, 1991, by Lang Exploratory Drilling, Salt Lake City, Utah.

The borehole diameter is 32-inches to 100 feet, and 22-inches to total depth of 360 feet. Borehole drilling was completed utilizing reverse circulation technique. A 24-inch blank, steel conductor casing was install and cemented into place to a depth of 100 feet. A 12-inch production casing schedule as outline in Appendix A, was successfully installed to total depth.

An observation well (Picollo School Monitor Well) is located 36.5 feet north of the production well. The well was drilled to 400 feet, with casing successfully installed to total depth. Details of well construction are summarized and included in Appendix A.

Two nearby shallow domestic wells (Snaza's well and Watson's well) were made available for water level monitoring during the pumping and recovery period. The well driller's construction log for the Snaza well is included in Attachment A. A well driller's log for the Watson well was not available. A brief well completion summary for the four wells are listed is Table 1.

Table 1. Well Completion Summary

Well Name	Well Depth (ft)	Screened Interval (ft. BGS*)	Distance from Production Well (ft)
Picollo Production	360	130 - 230, 250 - 350	0
Picollo Monitor	400	128 - 338, 359 - 400	36.5
Snaza's	120	75 - 118	280
Watson's	95	?	680

*Feet below ground surface

5.0 PUMPING TESTS

At completion of well construction a 28-stage, 8-inch, 150 Hp line-shaft turbine pump was installed to a depth of approximately 240 feet. This pump was utilized in the development and pumping test program, which consisted of pumping and surging the well for a total of 38 hours. At completion of pumping development, the water was sufficiently clear to proceed with the testing program.

Step-Drawdown Test

The step-drawdown test was conducted on January 25, 1991, and consisted of four, 100 minute steps (211, 312, 412, and 513 gpm). Pretesting water level in the pumping well was 58.68 feet. The results are summarized as follows:

Step	Time (minutes)	Discharge (gpm)	Drawdown (feet)	Specific Cap. (gpm/ft.dd)	Efficiency (%)
1	100	211	24.44	8.63	94
2	100	312	37.96	8.22	91
3	100	412	51.76	7.95	88
4	100	513	66.70	7.70	86

The step drawdown test indicates the well is very productive and efficient.

Constant Discharge Test

A 72-hour constant-discharge pumping test was conducted from 0900 hrs January 26, 1991

to 0900 hrs, January 29, 1991. Pretesting water level was 56.91 feet. The pumping rate was 427 gpm. Drawdown at the end of testing was 70.42 feet. Specific capacity was calculated to be 6.06 gpm/ft.dd. At the completion of the constant-discharge test recovery readings of the water level in the pumping well and three observation wells were collected until at least 90% of their maximum drawdown. The recovery test provides a check of the Transmissivity values calculated from the constant test and provides data on whether dewatering or recharge of the aquifer has occurred during the testing program. Data from the constant-discharge and recovery tests are summarized in Table 2, and semi-logarithmic plots of the test data are included in Appendix B.

Table 2. Summary of 72-Hour Constant Discharge Test Data. Picollo School Well.

Time (minutes)	Drawdown in Feet Recorded in Wells: Picollo Production	Picollo Monitor	Snaza's	Watson's
Pump On (SWL)	0	0	0	0
1 minute	25.99	3.00	0.01	0
1440 (1 day)	67.13	37.59	1.39	0.20
2880 (2 days)	69.62	39.76	1.60	0.29
4320 (3 days)	70.42	40.27	1.74	0.34
Pump Off				
1 minute	39.52	36.82	1.76	0.35
1440 (1 day)	1.39	1.40	0.36	0.19
2880 (2 days)	-0.97	-0.88	0.15	0.19
Static Water Levels in Wells Prior to Pumping Test				
	56.91	56.90	57.52	50.54

The drawdown plots show three slopes, while the recovery plots show two slopes. The varying slopes are typical of a somewhat layered alluvium aquifer and represents delayed yield due to variations in horizontal and vertical hydraulic conductivities.

Aquifer parameters of Transmissivity and Storage Coefficient were calculated using the Cooper-Jacob non-equilibrium equation. The mid-time drawdown data and late-time recovery data were considered most representative of the aquifer. Values obtained from the various slopes are listed in Table 3.

Water levels in the Snaza and Watson domestic wells were monitored during the pumping test program. Snaza's well is 120 feet deep and is located 280 feet from the production well. This well is unused and was not pumped during the testing period. Watson's well is 95 feet deep and is located 680 feet from the production well. The Watson well was pumped periodically during the pumping program.

Semi-logarithmic plots of drawdown and recovery data from these domestic wells are included in Appendix B. The plots show a delay in water level response to both drawdown and recovery of the production well pumping. Drawdown response in the domestic wells is less than would be predicted based on aquifer parameters calculated from data collected at the production and monitoring wells. The data indicates that the aquifer is semi-confined, and vertical leakage is occurring from the upper portion of the aquifer to the lower portion.

Table 3. Aquifer Parameters of T and S Calculated from 72-Hour Constant Discharge and Recovery Tests.

Well Name	Data	Transmissivity (gpd/ft)	Storage Coefficient
Picollo Production	Drawdown		
	Early Time	9,165	
	Middle	7,046*	2.6
	Late	12,525	
	Average	8,350	9.7×10^{-1}
	Recovery		
	Early Time	9,553	
	Late Time	6,670*	
	Average	8,052	
Picollo Monitor	Drawdown		
	Early Time	11,743	
	Middle	7,883*	3.70×10^{-3} +
	Late	37,576	
	Average	9,394	1.76×10^{-3}
	Recovery		
	Early Time	10,736	
	Late Time	7,180*	
	Average	9,394	

* = Chosen transmissivity values averaged for aquifer analysis (7195 gpd/ft)

+ = Chosen storage coefficient for aquifer analysis

Aquifer parameters calculated based on the Cooper-Jacob, modified nonequilibrium equation

$$T = \frac{264Q}{\Delta s} \qquad S = \frac{0.3Tt_0}{r^2}$$

Q = Pumping rate, 427 gpm

Δs = Drawdown for one log cycle

t_0 = time (in days) where projected slope of drawdown intercepts zero drawdown

r = radial distance from pumping well (ft)

The two domestic wells monitored during this program intercept only the upper portion of the horizontally-layered alluvial aquifer system. Because the system is semi-confined and the domestic wells only partially penetrate the aquifer, drawdown effects in these wells due to production well pumping are less than what was recorded at the monitoring well, which was completed to a similar depth as the production well. Any production pumping impacts on the shallow aquifer system due to long term pumping of the production well must be calculated using aquifer parameters derived from data collected at the domestic wells. Transmissivity values calculated from drawdown and recovery data obtained at the Snaza well were averaged and produced a value of 106,392 gpd/ft. The Storage Coefficient was calculated to be 0.0124.

6.0 IMPACT ANALYSIS

Data collected during the pumping test program indicates that the production well, monitor well, and the domestic wells monitored during the tests are hydraulically connected in a multi-layer, semi-unconfined aquifer system. Effects of production pumping on wells completed in the shallow portion of the aquifer are projected to be less than wells completed in the deeper portion. To project impacts at both depths in the aquifer system, two separate analyses were conducted utilizing aquifer parameters calculated from the pumping/recovery data.

The aquifer system was analyzed using a computerized analytical model (Koch, 1886) to project drawdown in the shallow and deep aquifer. The model utilizes the Theis nonequilibrium equation which applies to laterally extensive, homogeneous and isotropic ground-water systems with no recharge into the system. The ground water system in the area of the Picollo School Production Well is not entirely consistent with these conditions, although for initial impact analysis the projected drawdown values should be relatively representative of what might be expected.

The analysis was performed on both the deep and shallow aquifers, using the following parameters: 1) pumping rates of 150, 250, and 350 gpm; 2) times of 3 days, 1 and 5 years, and; 3) distances from the production well of 1, 300, 600, 1,000, and 2,000 feet. Aquifer parameters used for the deep aquifer were T = 7,195 gpd/ft. and S = 0.0037, and for the

shallow aquifer T= 106,385 gpd/ft. and S = 0.0124. Results of the two simulations are summarized in Table 4 and 5, and graphically displayed in Figures 1 and 2.

Calculated projection indicates that after 5 years of pumping at a continuous rate of 350 gpm, drawdown in the production well would be 116 feet. Drawdown at a distance of 2,000 feet from the production well would be 31 feet in the deep aquifer and less than 2 feet in the shallow aquifer for the same time frame. Long term monitoring of the production well may indicate greater than projected drawdowns due to deterioration in well efficiency. As the well efficiency decreases distant response is expected to be less than projected for both the deep and shallow aquifers.

The computer model projections assume that no recharge to the aquifer has occurred and that the regional hydraulic gradient is negligible. Recharge to the system would result in less drawdown with time at the production well.

Table 4. Results of Simulated Drawdown Response in the Deep Aquifer due to Pumping the Picollo School Well

Pumping Rate 150 GPM

Time		Water Level Drawdown in Aquifer (ft)				
Days	Years	1*	300*	600*	1000*	2000*
3		34.3	7.2	4.0	2.0	0.3
365	1	45.8	18.6	15.3	12.8	9.5
1825	5	49.7	22.4	19.1	16.7	13.3

* Distance from Pumping Well (ft)

Pumping Rate 250 GPM

Time		Water Level Drawdown in Aquifer (ft)				
Days	Years	1*	300*	600*	1000*	2000*
3		57.2	11.9	6.8	3.4	0.6
365	1	76.4	30.9	25.4	21.4	15.9
1825	5	82.8	37.3	31.8	27.8	22.2

* Distance from Pumping Well (ft)

Pumping Rate 350 GPM

Time		Water Level Drawdown in Aquifer (ft)				
Days	Years	1*	300*	600*	1000*	2000*
3		80.1	16.7	9.4	4.8	0.8
365	1	106.9	43.3	35.6	29.9	22.2
1825	5	115.9	52.3	44.6	38.9	31.1

* Distance from Pumping Well (ft)

Simulation Parameters

Transmissivity (T) = 7195 gpd/ft
Storage Coefficient (S) = 3.70×10^{-3}

Table 5. Results of Simulated Drawdown Response in the Shallow Aquifer due to Pumping the Picollo School Well

Pumping Rate 150 GPM

Time		Water Level Drawdown in Aquifer (ft)				
Days	Years	1*	300*	600*	1000*	2000*
3		3.9	0.2	0.02	0.0	0.0
365	1	3.9	1.0	0.8	0.6	0.4
1825	5	3.9	1.3	1.0	0.9	0.6

* Distance from Pumping Well (ft)

Pumping Rate 250 GPM

Time		Water Level Drawdown in Aquifer (ft)				
Days	Years	1*	300*	600*	1000*	2000*
3		6.5	0.4	0.01	0.0	0.0
365	1	6.5	1.7	1.3	1.0	0.7
1825	5	6.5	2.1	1.8	1.5	1.1

* Distance from Pumping Well (ft)

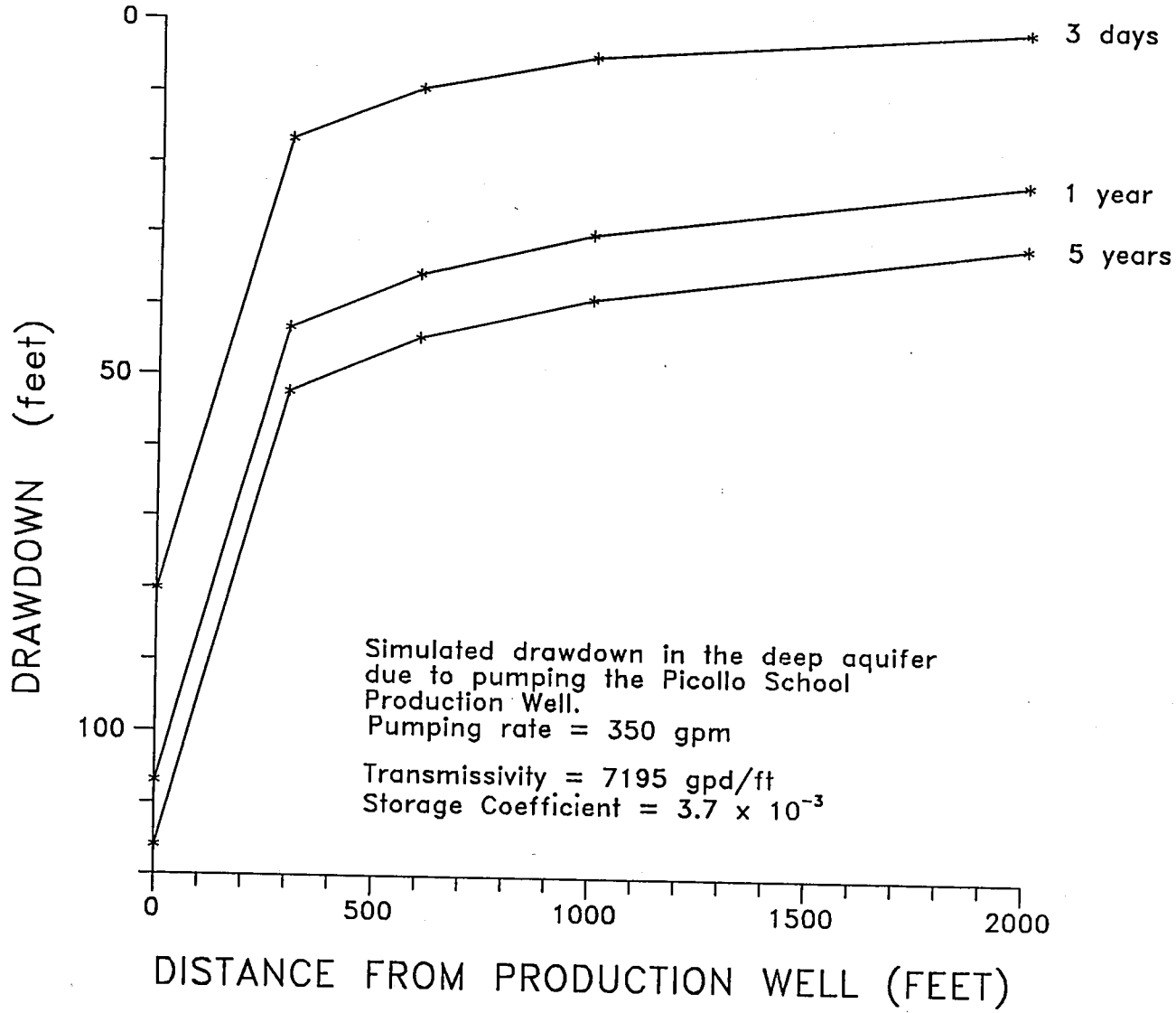
Pumping Rate 350 GPM

Time		Water Level Drawdown in Aquifer (ft)				
Days	Years	1*	300*	600*	1000*	2000*
3		9.1	0.6	0.1	0.0	0.0
365	1	9.1	2.4	1.9	1.5	1.0
1825	5	9.1	3.0	2.5	2.1	1.6

* Distance from Pumping Well (ft)

Simulation Parameters

Transmissivity (T) = 106,385 gpd/ft
Storage Coefficient (S) = 1.24×10^{-2}



Utility Division of Washoe County	DATE: 4/1/91
	DRAWN BY: DAK
	CHECKED BY:
	APPROVED BY:
	DRAWING NO:
	PROJECT: 396110151
Simulated Drawdown in the Deep Aquifer Due to Pumping Picollo Production Well	
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure 1**

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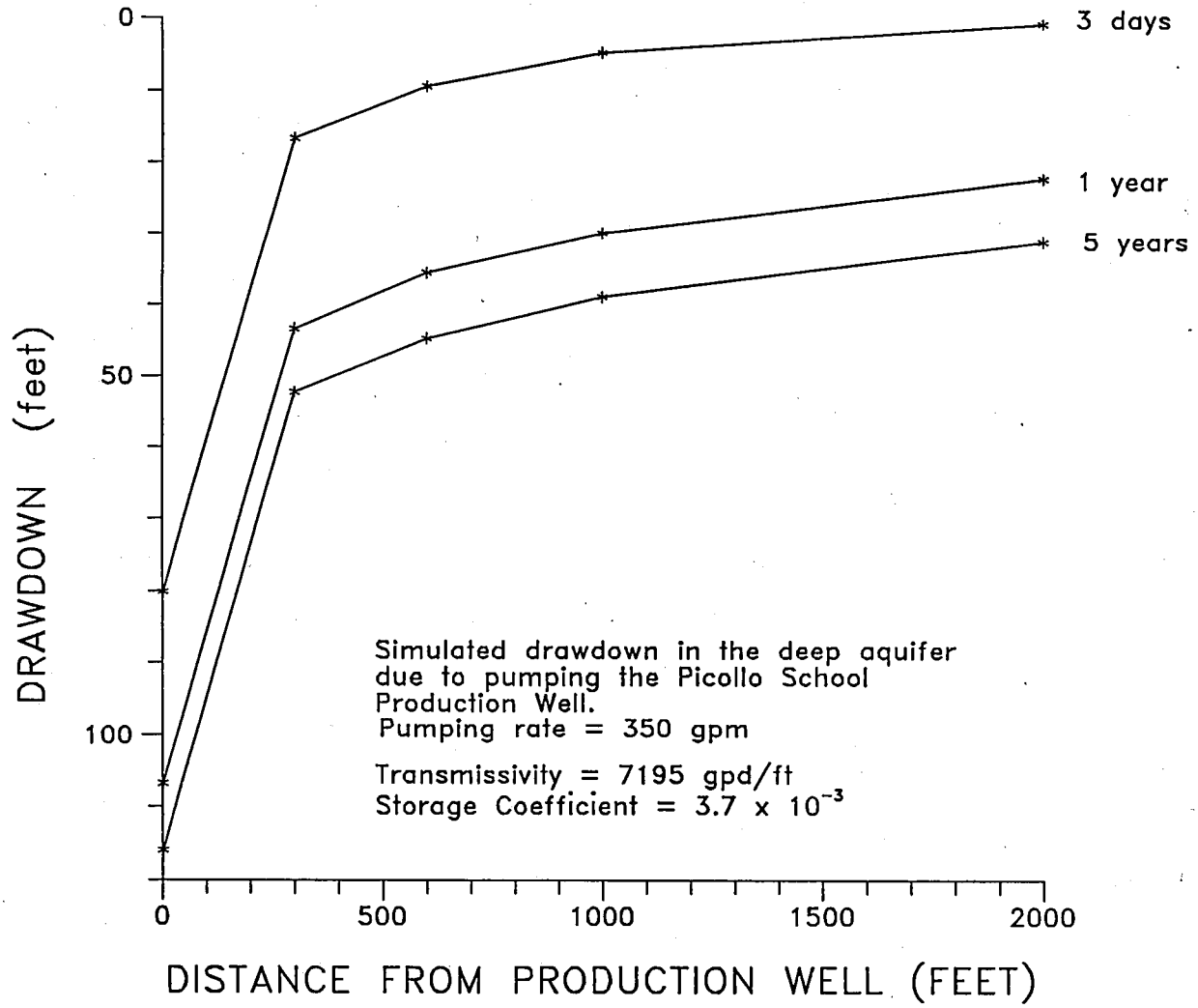

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	DRAWN BY: DAK
Simulated Drawdown in the Deep Aquifer Due to Pumping Picollo Production Well	CHECKED BY:
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	DRAWING NO:
	PROJECT: 396110151
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	Figure 1

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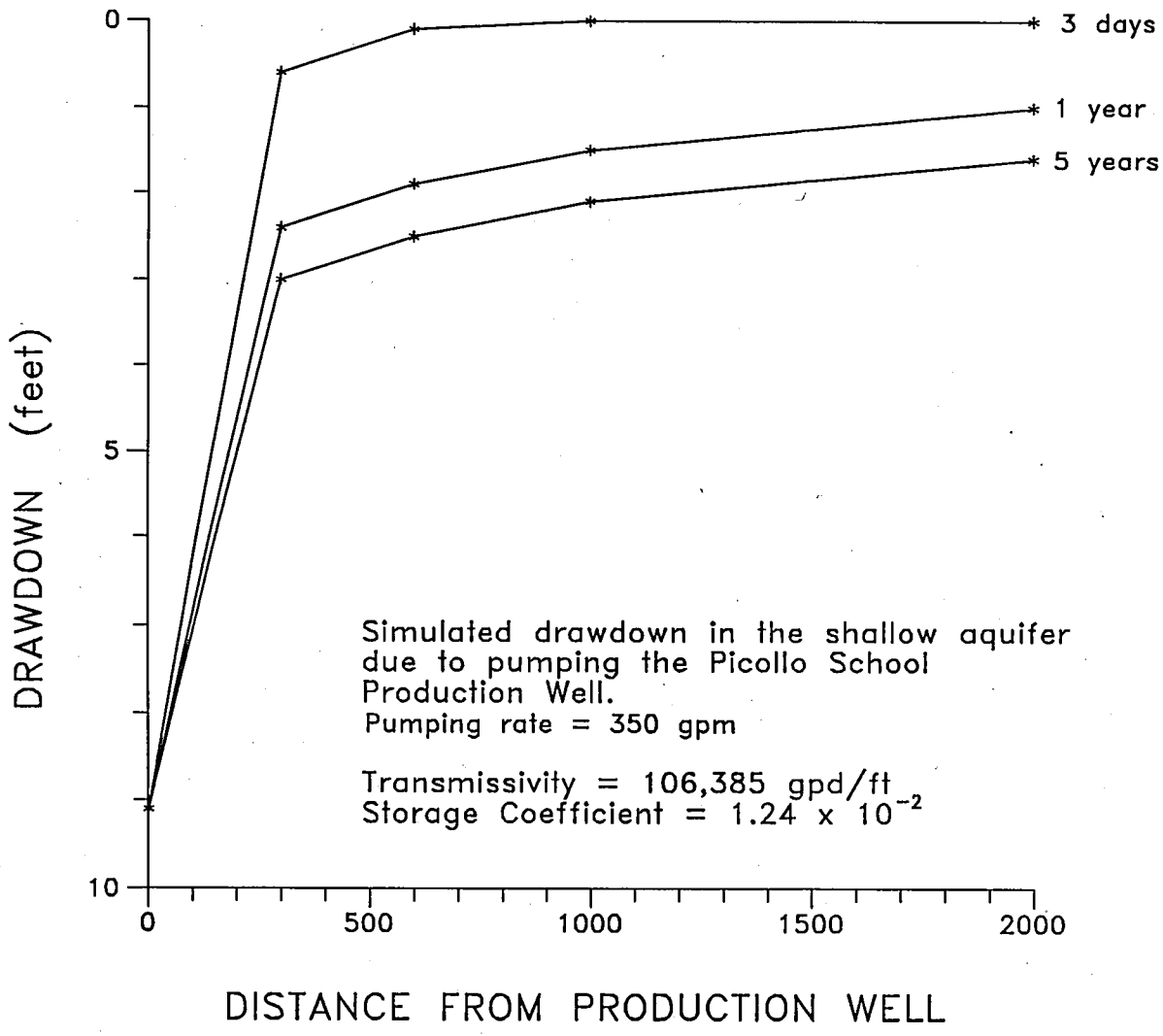

Utility Division of of Washoe County	DATE: 4/1/91
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	APPROVED BY:
	DRAWING NO:
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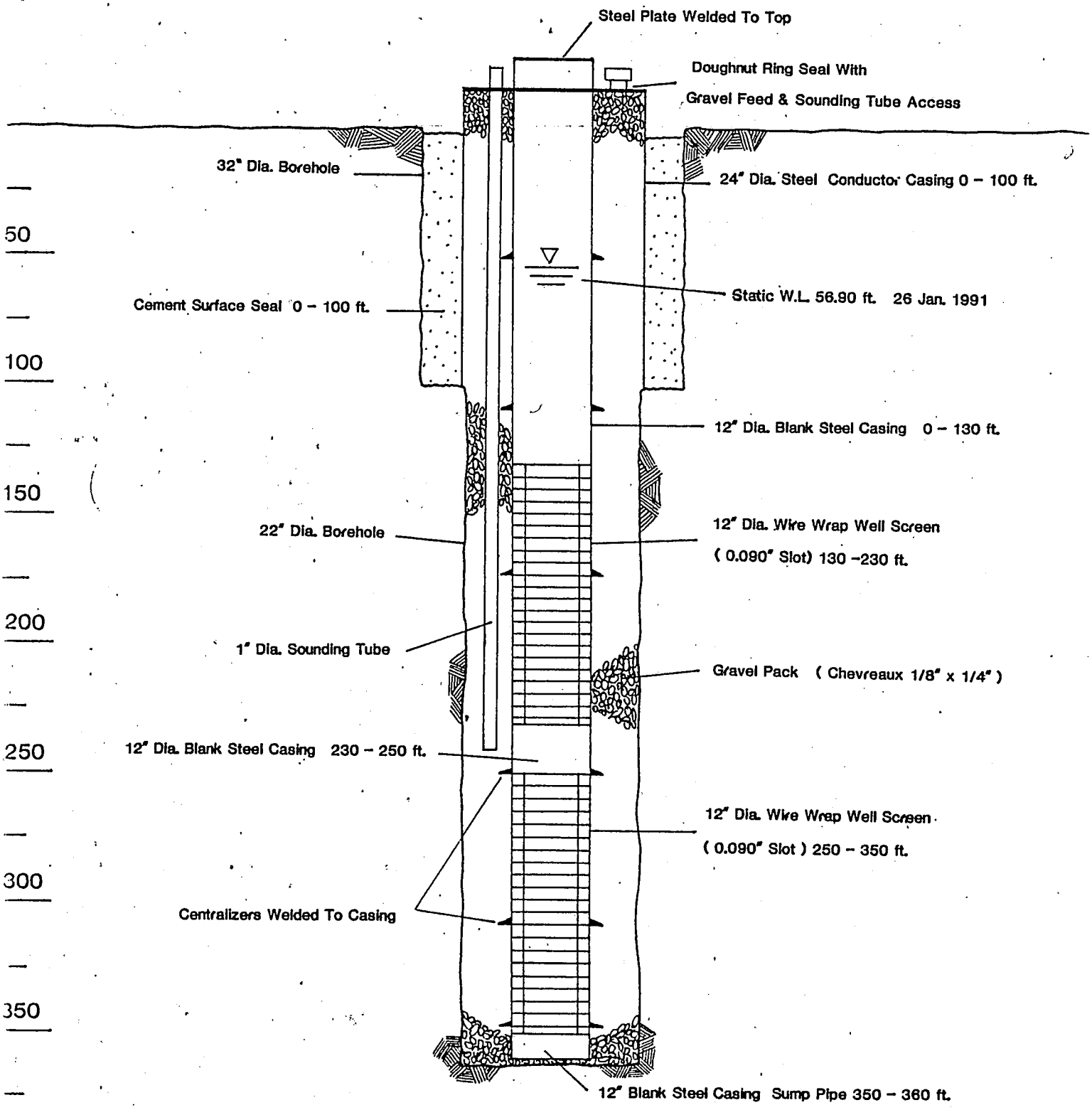
Simulated Drawdown in the Shallow Aquifer Due to Pumping Picollo Production Well	
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	Figure 2

G:\WASHOE\ACAD10\PPSHALO.DWG

APPENDIX A

Well Construction Details

AS BUILT
MARVIN PICOLLO SCHOOL WELL
November 1990

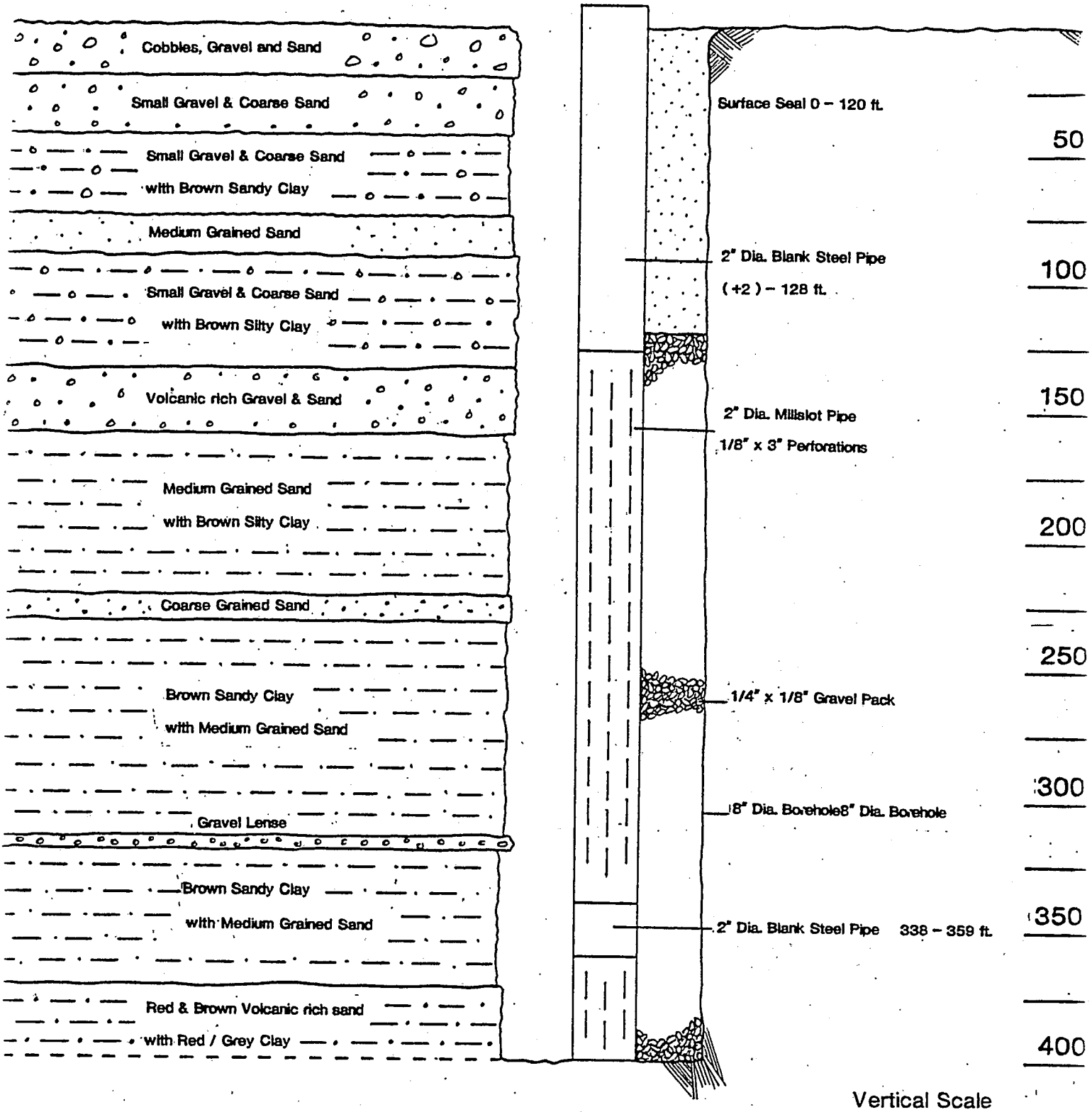


Vertical Scale 25 ft.

No well log for Watson's Well. Reported depth is 95 feet.

FINALIZED CONSTRUCTION & STRATIGRAPHIC COLUMN

Picolic Monitoring Wel



Vertical Scale
25 feet

DIVISION OF WATER RESOURCES

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLERS REPORT

Please complete this form in its entirety

OFFICE USE ONLY
Log No. 11299
Permit No.
Basin Truckee Meadows

1. OWNER SNAZA Domestic Gerald C. Johnson ADDRESS 950 Foothill Road; Reno, Nevada

2. LOCATION N ¼ NE ¼ Sec. 18 T. 18 N/S R. 20 E Washoe County
PERMIT NO.

3. TYPE OF WORK				4. PROPOSED USE				5. TYPE WELL	
New Well	☒	Recondition	☐	Domestic	☒	Irrigation	☐	Test	☐	Cable	☒	Rotary	☐
Deepen	☐	Other	☐	Municipal	☐	Industrial	☐	Stock	☐	Other	☐		

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Rocky topsoil		0	2	2
Cobbles to 12" w/				
some yellow clay		2	21	19
Small boulders to				
2' diam. w/ sand &	silt	21	62	41
(first water @ 48')				
Soft sandy yellow				
clay w/ some coarse sand				
lenses- water @ 83'		62	115	53
Clean coarse sand	yes	115	118	3
Soft yellow clay		118	120	2

Date started 27 October, 1970, 19
Date completed 3 November, 1970, 19

7. WELL TEST DATA

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

BAILER TEST

G.P.M. 40 Draw down 32 feet 2 hours
G.P.M. Draw down feet hours
G.P.M. Draw down feet hours

8. WELL CONSTRUCTION

Diameter hole 10" / 0-45 6" / 45-120 Total depth 120 feet
Casing record
Weight per foot 12.8 Thickness .188

Diameter	From	To
6 5/8" OD inches	0 feet	120 feet
inches	feet	feet
inches	feet	feet
inches	feet	feet
inches	feet	feet
inches	feet	feet

Surface seal: Yes ☒ No ☐ Type Cement
Depth of seal 45 feet
Gravel packed: Yes ☐ No ☒
Gravel packed from feet to feet

Perforations:
Type perforation oxy-acet torch
Size perforation 1/8 X 6"
From 75 feet to 118 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

9. WATER LEVEL

Static water level 33 Feet below land surface
Flow G.P.M.
Water temperature cold F. Quality not tested

10. DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the best of my knowledge.

Name W.L. McDonald & Co.
Address 1715 Trabert Way; Sparks, Nev.
Nevada contractor's license number 9767
Nevada driller's license number 493
Signed
Date 13 November, 1970

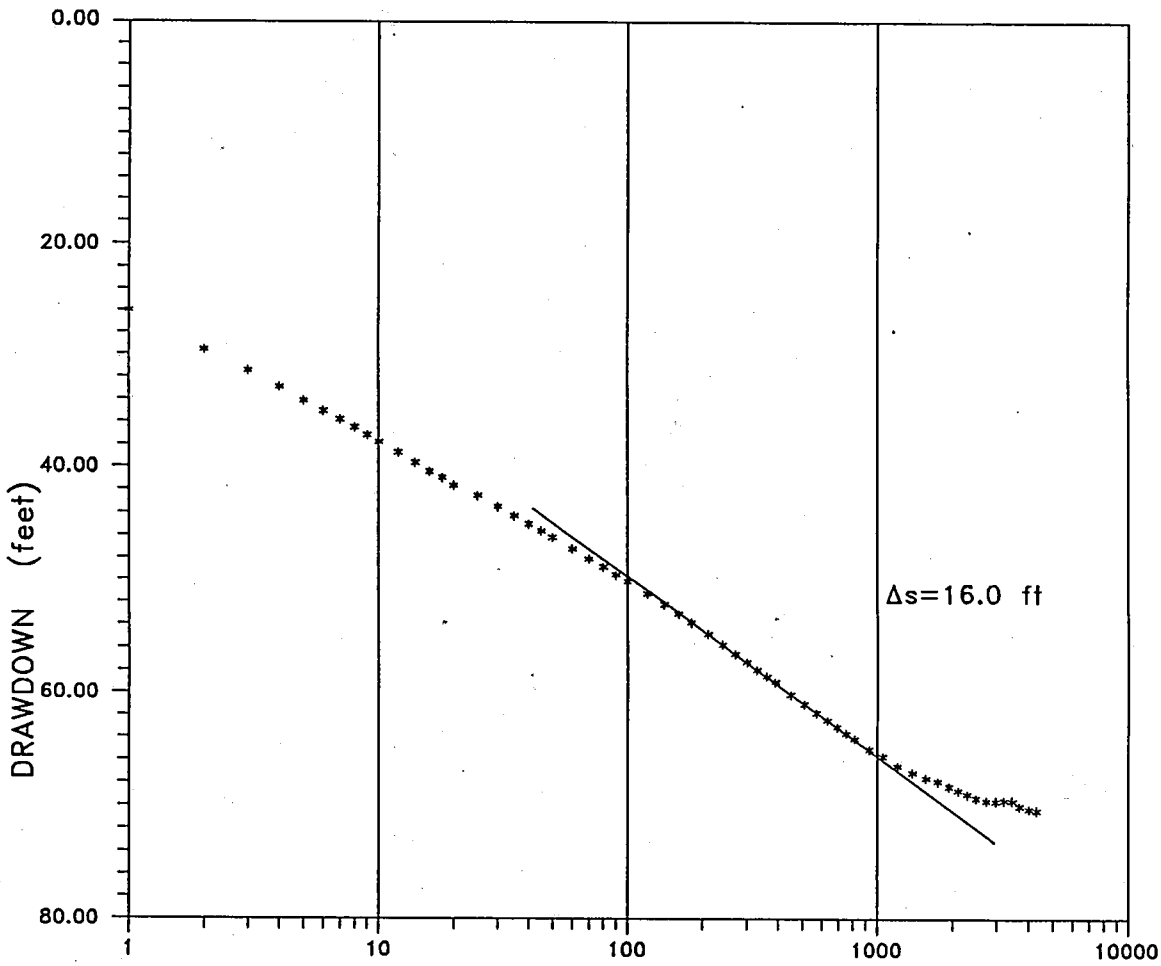
APPENDIX B

Semilogarithmic Plots of Water Level Drawdown and Recovery

Picollo Production Well

Drawdown Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 7,046gpd/ft



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	APPROVED BY:
	DRAWING NO:
	PROJECT: 396110151
Picollo Production Well Drawdown Data Semilogarithmic Plot	
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-1**

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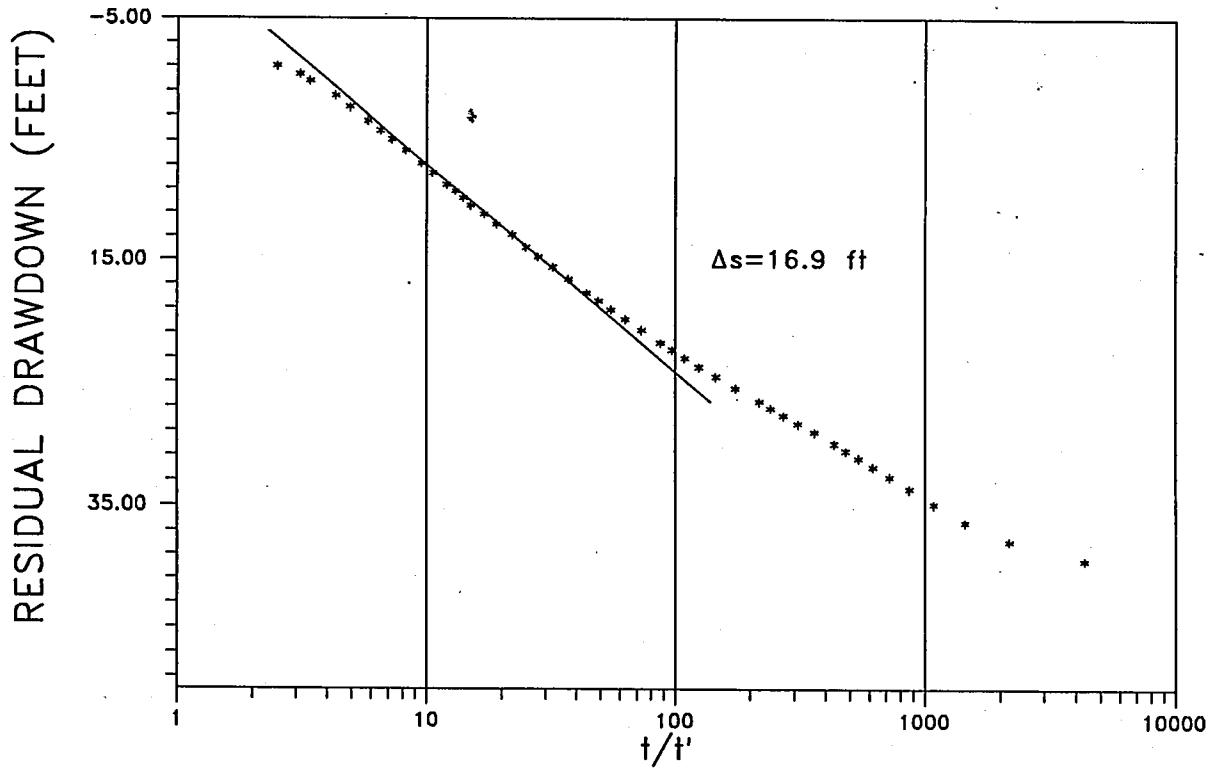
Picollo Production Well

Recovery Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 6,670gpd/ft



TIME SINCE PUMPING STARTED / TIME SINCE PUMPING STOPPED

Utility Division of Washoe County	DATE: 4/1/91
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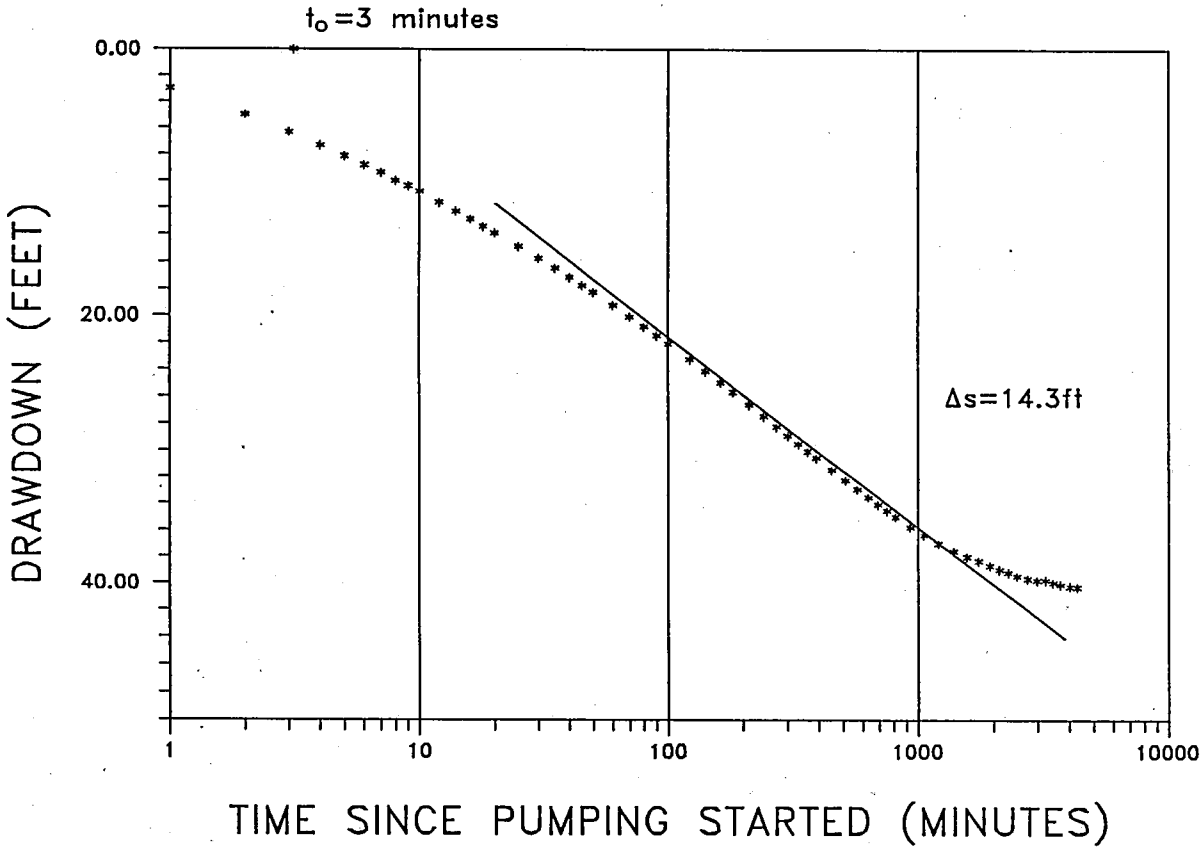
Picollo Production Well Recovery Data Semilogarithmic Plot	CHECKED BY:
	APPROVED BY:
	DRAWING NO:
	PROJECT: 396110151
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-2**

G:\WASHOE\ACAD10\PPREC.DWG

Picollo Monitor Well

Drawdown Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 7,883gpd/ft
Storage Coeficient=3.70×10^{-3}



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	APPROVED BY:
Picollo Monitor Well Drawdown Data Semilogarithmic Plot	DRAWING NO:
	PROJECT: 396110151
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-3**

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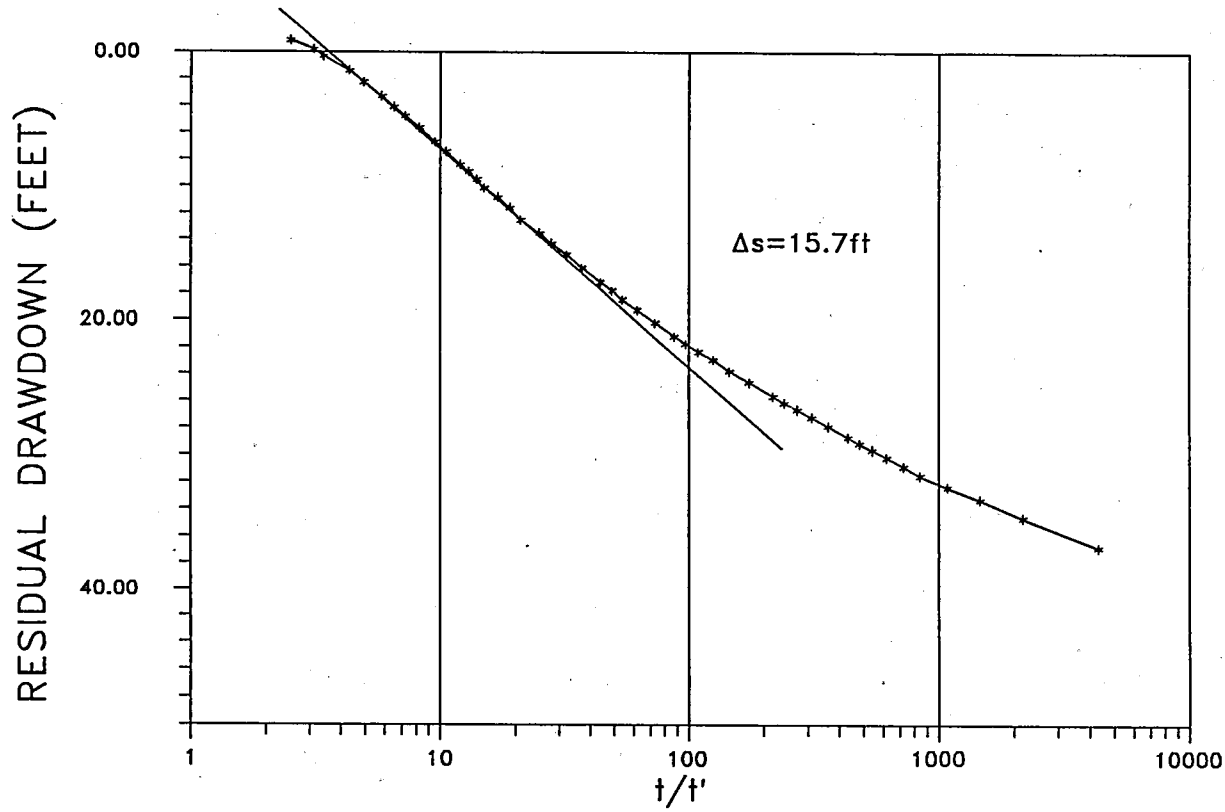
Picollo Monitor Well

Recovery Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 7,180gpd/ft



TIME SINCE PUMPING STARTED / TIME SINCE PUMPING STOPPED

Utility Division of Washoe County	DATE: 4/1/91
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	APPROVED BY:
	DRAWING NO:
	PROJECT: 396110151
Picollo Monitor Well Recovery Data Semilogarithmic Plot	
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-4**

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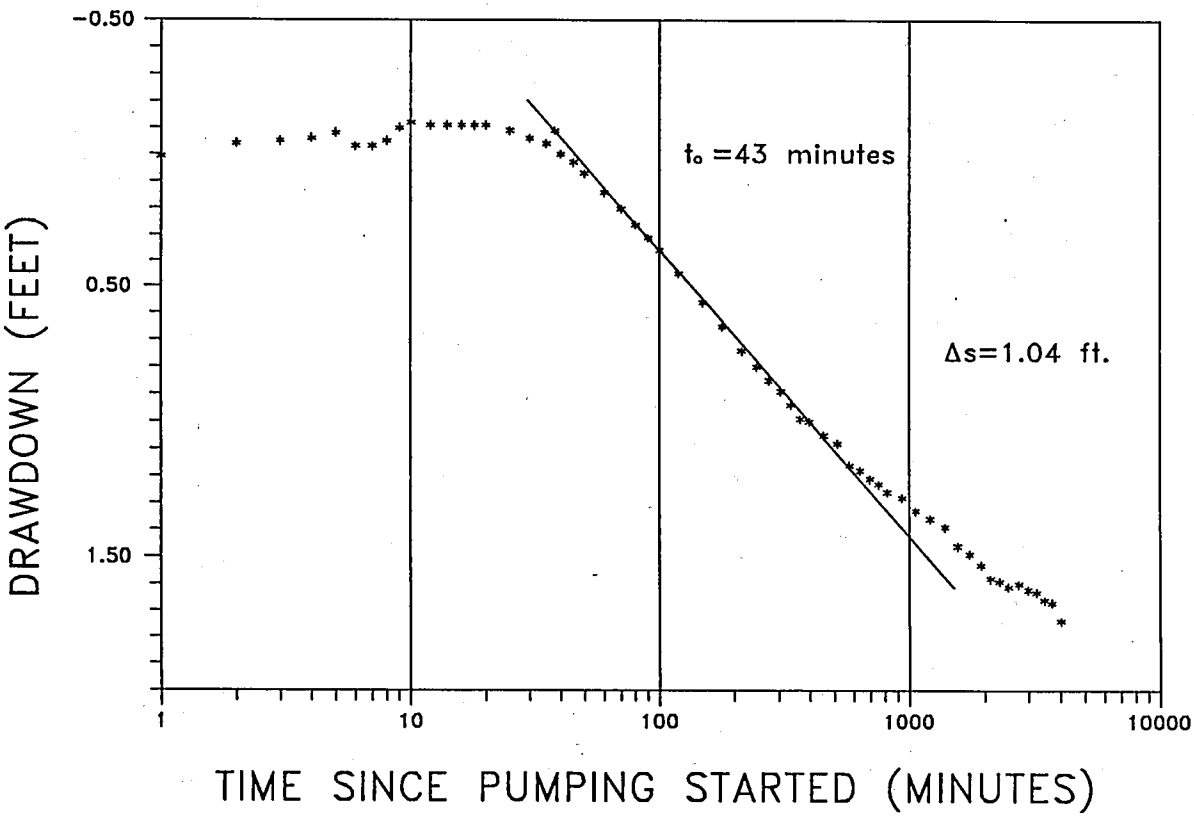
Snaza's Well

Drawdown Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 108,392gpd/ft
Storage Coefficient=1.24×10^{-2}



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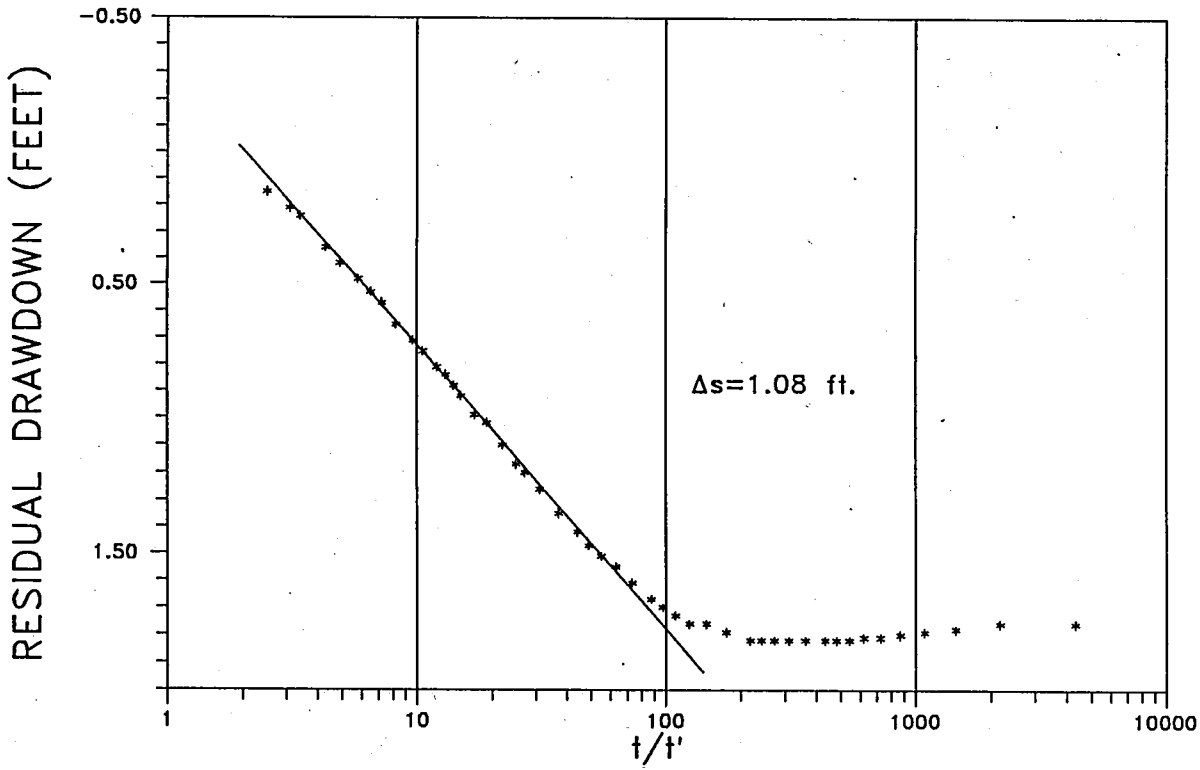
	DRAWING NO:
	PROJECT: 396110151
Snaza's Well Drawdown Data Semilogarithmic Plot	
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-5**

G:\WASHOE\ACAD10\SINPT2.DWG

Snaza's Well

Recovery Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 104,377gpd/ft



TIME SINCE PUMPING STARTED / TIME SINCE PUMPING STOPPED

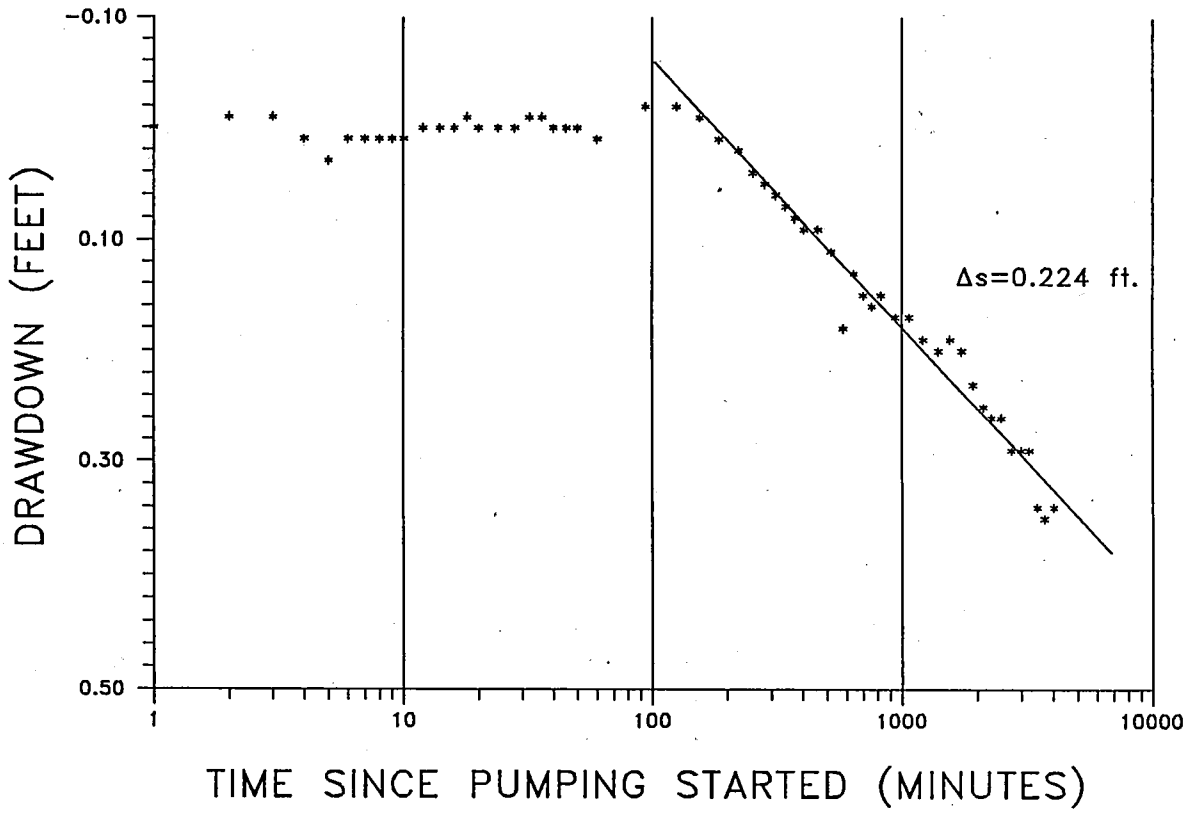
Utility Division of Washoe County	DATE: 4/1/91
	DRAWN BY: DAK
	CHECKED BY:
	APPROVED BY:
Snaza's Well Recovery Data Semilogarithmic Plot	DRAWING NO:
	PROJECT: 396110151
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-6**

G:\WASHOE\ACAD10\SREC.DWG

Watson's Well

Drawdown Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 503,250gpd/ft



Utility Division of Washoe County	DATE: 4/1/91
	DRAWN BY: DAK
Watson's Well Drawdown Data Semilogarithmic Plot	CHECKED BY:
	APPROVED BY:
	DRAWING NO:
	PROJECT: 396110151
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-7**

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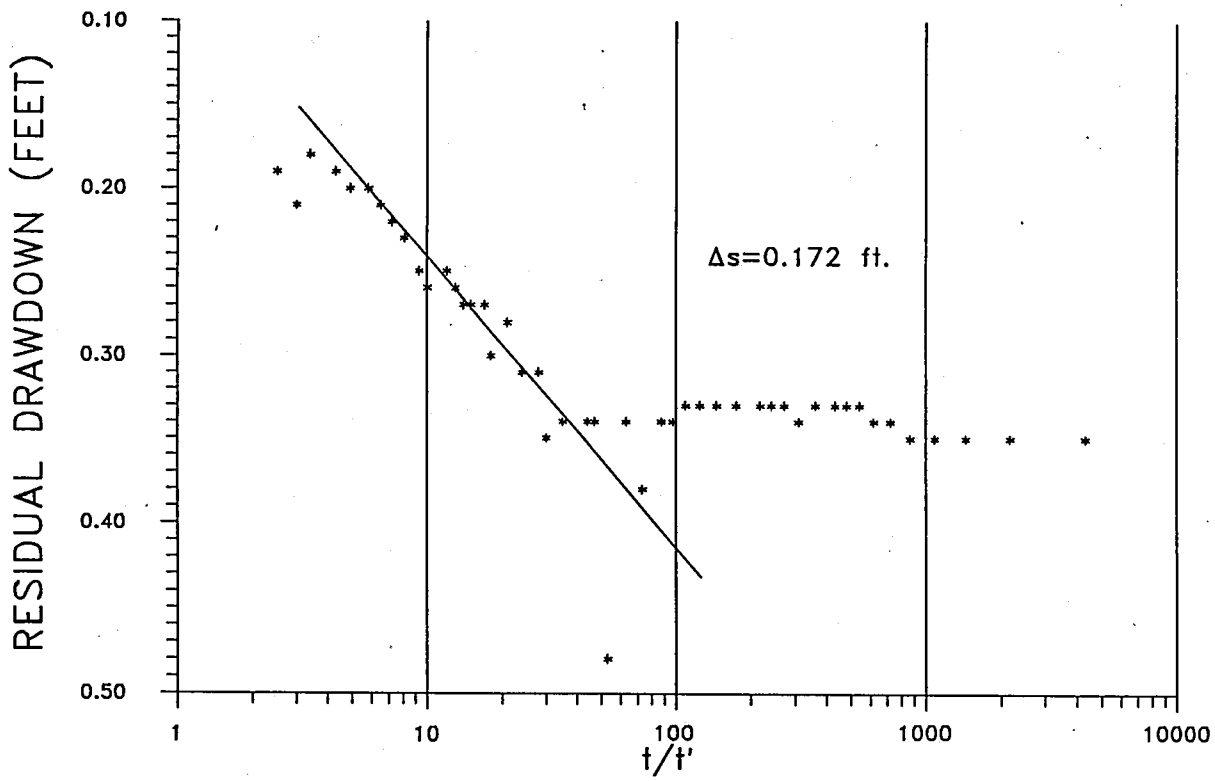
Watson's Well

Recovery Data from 72 hour Constant Discharge Test.

Test Period: 1/26/91 to 1/29/91
Discharge Rate = 427gpm
Transmissivity = 655,395gpd/ft



TIME SINCE PUMPING STARTED / TIME SINCE PUMPING STOPPED

Utility Division of Washoe County	DATE: 4/1/91
	DRAWN BY: DAK
	CHECKED BY:
	APPROVED BY:
Watson's Well Recovery Data Semilogarithmic Plot	DRAWING NO:
	PROJECT: 396110151
Hydro-Search, Inc. HYDROLOGISTS-GEOLOGISTS-ENGINEERS Reno Denver Milwaukee Irvine	**Figure B-8**

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