1506-00021

Pumping Level 28.05 @ 240 gpm 26 June 97 s = 13.65 Sp.Cap 17.6 gpm/ft

Pumping Level 30.55 @ 260 gpm 22 May 08 s = 16.50 15.8

PURITY No. 5
(Hidden Valley No. 5)
CONSTRUCTION AND TEST PUMPING
SUMMARY REPORT

WASHOE COUNTY UTILITY DIVISION
JANUARY, 1993

WASHOE COUNTY
DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION
P.O. BOX 11130 RENO, NEVADA 89520

PURITY No. 5
(Hidden Valley No. 5)
CONSTRUCTION AND TEST PUMPING
SUMMARY REPORT

WASHOE COUNTY UTILITY DIVISION
JANUARY, 1993

TABLE OF CONTENTS

BACKGROUND

The Hidden Valley Water System, formerly known as Purity Water Company was purchased by Washoe County in 1991. The system consists of two wells supplying about 1100 residences in the Hidden Valley area. During the summer of 1992 it became apparent that additional capacity was necessary to meet growing demand. Washoe County began looking for a new well site in the Spring of 1992.

The location of the two existing wells is several miles from the majority of the customers served by the Hidden Valley system (see location map, Figure 1 for well locations). The primary reason the wells are so far away is because of elevated Arsenic levels in the groundwater near Hidden Valley. The goal of this project was to locate a drill site and construct a well that would be relatively easy to connect to the system and meet drinking water standards for Arsenic and other chemical constituents. To meet these goals, the site shown on Figure 1 as Hidden Valley No. 5 was selected.

DRILLING PROGRAM

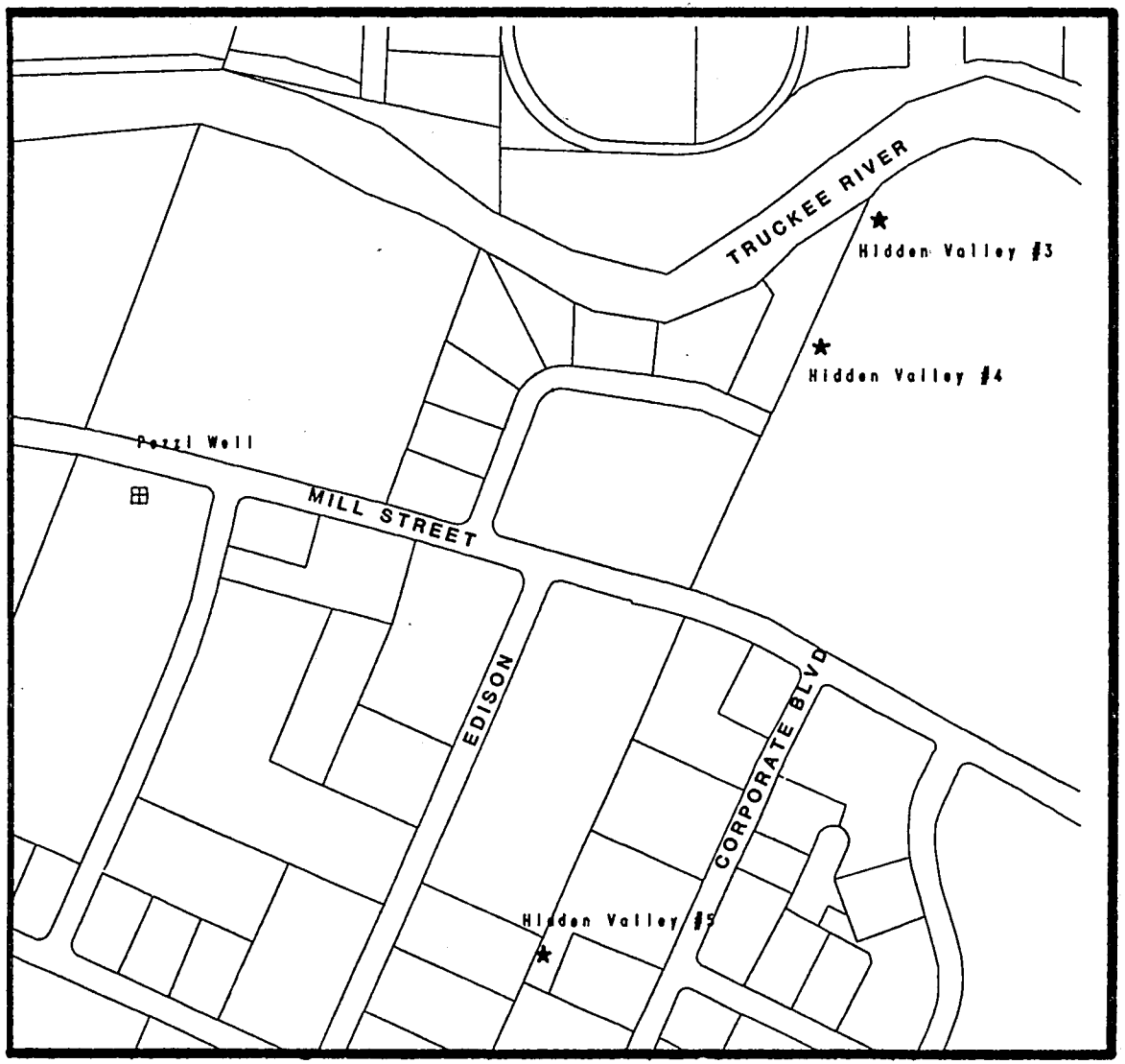
An evaluation of local ground water quality data showed Arsenic consentrations were likely to increase with depth (See Appendix 1 for a summary of water quality analyses). A drilling and testing program was designed to try and identify aquifers low in Arsenic concentration. The proposed program included a monitoring well sealed and screened in a zone below the production well producing zone (See Appendix 2 for summary of drilling and testing proposal).

Drilling encountered alluvial materials composed primarily of coarse sand and gravel. Layers of clay were encountered which allowed the monitoring well to be sealed below the proposed production well zone (Appendix 3 includes the Drillers Report to the Nevada State Engineer and the Geologists field Log).

SUMMARY AND RECOMMENDATIONS

The monitoring well was drilled to 225 feet and sealed so water from the well came from zones below 180 feet. The production well was completed to a depth of 138 feet and produces from shallow aquifers between 50 and 138 feet deep (see as-built diagram, Figures 2). Water quality samples collected from the monitoring well showed Arsenic concentrations of about 0.06 parts per million (the drinking water standard is currently 0.05 ppm). Samples collected from the shallow production well showed Arsenic concentrations ranging from 0.003 to 0.005 ppm (sampled at various flow rates between 150 gpm and 600 gpm).

Step drawdown testing indicated the production well is over 90% efficient at all pumping rates between 180 and 600 gpm (see Appendix 2, Test Pumping Data and Analyses). A 68 hour constant

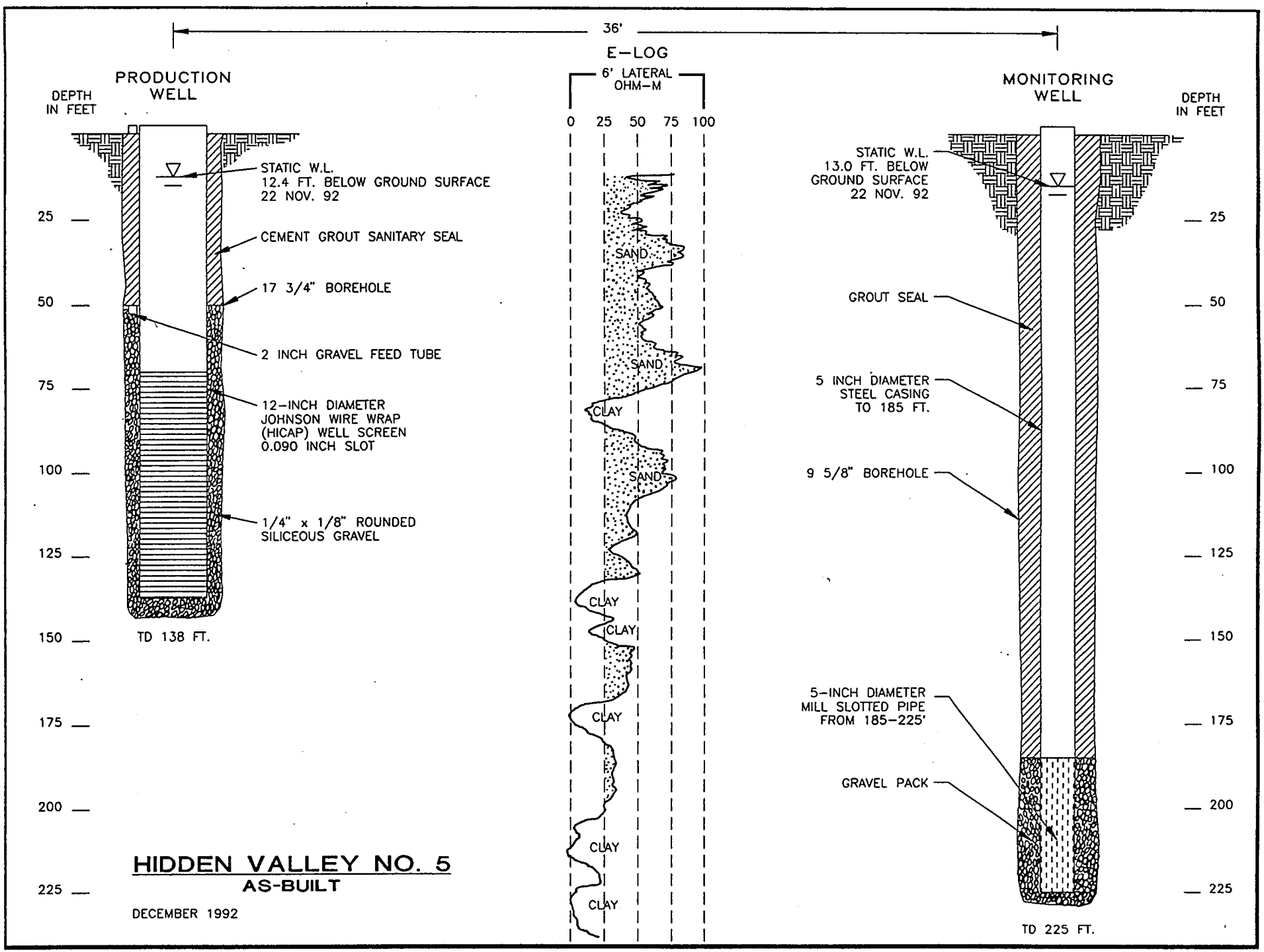


Location Map
Figure No.1
Dec 92

⊞ WESTPAC WELL

★ WASHOE COUNTY WELLS

Scale
500 ft.



HIDDEN VALLEY NO. 5
AS-BUILT

DECEMBER 1992

FIGURE 2

discharge test (450 gpm) showed aquifer Transmissivity to be about 29,000 gpd/ft. and that the pumping radius of influence intercepted some type of recharge boundary about 20 minutes into the test.

The well may be equipped to pump 450 gallons per minute on a continuous basis with a maximum expected pumping level of about 50 feet below ground surface. Sand production, as measured on startup at a pumping rate of 450+ gpm was less than 2 parts per million. Sand production diminished to virtually 0 ppm after a minute or two of startup. Sand production was measured using a Rossum Sand Content Measuring device.

Water quality samples collected at the end of the 68 hour constant discharge test showed some traces of organic contamination (See Appendix 1, Water Quality Analyses). The contaminant levels were below limits set by the Environmental Protection Agency. The well should be monitored monthly until trends related to the organic contamination can be determined. The ultimate goal would be to treat the water to reduce contaminant levels to below detection limits.

APPENDIX 1-Water Quality Analyses

Eight samples were collected during the drilling and testing of Purity No. 5. Two were collected from the monitoring well for Arsenic analyses. Five samples were collected for Arsenic analysis from the production well at the end of each step during the step-drawdown test. The final sample was collected from the production well at the end of the 68-hour constant discharge test and was analyzed for inorganics, metals, radionuclides, and organics. Results of all analyses are included in this Appendix.

Water quality met all current standards for drinking water. The final sample showed traces of organic contaminants. The following memo summarizes these contaminants and makes recommendations regarding future sampling (Memo from Terri Svetich to Dan Dragan, dated 20 January, 1993).

WASHOE COUNTY

"To Protect and To Serve"

1195-B CORPORATE BOULEVARD
POST OFFICE BOX 11130
RENO, NEVADA 89520
PHONE: (702) 785-4743
FAX #: (702) 785-5978

UTILITY DIVISION
DEPARTMENT OF PUBLIC WORKS
John M. Collins, Chief Sanitary Engineer

January 20, 1993

To: Dan Dragan

From: Terri Svetich

Re: Organic Test Results for Hidden Valley Well #5

There were three regulated contaminants detected in the sample submitted to Alpha Analytical. These were:

Contaminant	1,1 Dichloroethylene
MCL	7.0 parts per billion
Well #5	0.6 parts per billion
Sources	Results from the breakdown of related solvents
Health Effects	Damage to liver and kidneys

Contaminant	1,1,1 Trichloroethane
MCL	200 parts per billion
Well #5	8.4 parts per billion
Sources	Used as a degreaser of metals and cleaner
Health Effects	Damage to liver, nervous and circulatory system

Contaminant	Tetrachloroethylene aka Perchloroethylene (PCE)
MCL	5.0 parts per billion
Well #5	0.7 parts per billion
Sources	Used as a dry cleaning/industrial solvent
Health Effects	Probable Cancer

I spoke with Doug Coulter at District Health Department regarding this matter. Westpac's "Pezzi" Well had no organics detected in their last round of sampling which was in 1991. There is no doubt this well is vulnerable to organic contamination by virtue of its proximity to the industrial park. Sampling for organic contaminants (Method 524.2) would need to be conducted quarterly for a minimum period of two years. The trend that develops will be the basis for deciding frequency of continued monitoring.

cc: John Collins
John Presco
Jesse Coffman
Doug Coulter

IN TRIPLICATE
(PLEASE PRINT OR TYPE)

NEVADA STATE HEALTH LABORATORY

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

SAMPLE: HIDDEN VALLEY WELL #3

100758

WATER CHEMISTRY ANALYSIS:

Attn: Fees may apply to some types of samples.

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 pumped thoroughly before sampling, changing the water in the casing at least three times. Product water from filters should be sampled after running for about ten (10) minutes.

Sampled by DAN DRAGAN Date 11/25/92
Owner WASHOE COUNTY Phone 785-4743
Address 1195-B CORPORATE BLVD
City RENO State NEV

REPORT TO:

Name DAN DRAGAN: WASHOE COUNTY UTILITY DIVISION
Address P.O. BOX 11130
City RENO
State NEV Zip 89520

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

State NEVADA County WASHOE
Township 19N Range 20E Section 16
General Location UTILITY DIVISION: 1195-B CORPORATE BLVD
Source Address ABOVE

REASON FOR ANALYSIS:

- ☐ Loan
- ☐ Personal health reasons
- ☐ Purchase of the property
- ☐ Rental or sale of property
- ☐ Subdivision approval
- ☒ Other POTENTIAL MUNICIPAL WELL

USE OF WATER:

- ☐ Domestic drinking water
- ☐ Geothermal
- ☐ Industrial or mining
- ☐ Irrigation
- ☐ Other MUNICIPAL WELL

Initials

SOURCE OF WATER:

Filter ☐ Yes ☒ No
Public ☐ Yes ☒ No
Spring
Well X Depth 138 ft.
Hot Cold X
IN USE ☐ Yes ☒ No

Type
Name
Surface
Casing diameter 12 in.
Casing depth 138 ft.

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

FOR LABORATORY USE ONLY

0.0420 209 0.66 16.9 5.6 991.9 100758

Constituent	ppm	Constituent	ppm	Constituent	ppm	Constituent	S.U.
T.D.S. @ 103° C.	175	Chloride	5	Iron	0.03	Color	3
Hardness	113	Nitrate -N	1.3	Manganese	0.00	Turbidity	0.2
Calcium	27	Alkalinity	112	Copper	0.00	pH	8.07
Magnesium	11	Bicarbonate	137	Zinc	0.01	EC	265
Sodium	11	Carbonate	0	Barium	0.04		
Potassium	3	Fluoride	0.06	Boron	0.0		
Sulfate	14	Arsenic	0.003	Silica	36		
				Gross Alpha	<3 Pci/l	Gross Radium	
				Gross Beta	3 Pci/l		

RECEIVED
MAR 18 1993
HEALTH PROTECTION SERVICES

PRINT OTHER DESIRED CONSTITUENTS BELOW

Constituent	ppm
Cd	<0.001
Cr	<0.005
Pb	<0.005
Hg	<0.0005
Se	<0.001
Ag	<0.005
	✓
MBAS	<0.1

Fee $196.00
Collected by
PWS I.D.
SDWA—Pri. Sec.
2nd 3rd
Date Rec'd 11/25/92 Init. KR

ppm = parts per million, milligrams per liter
S.U. = Standard Units

Remarks 2/16/93 98% KR Eq 1-13-93
Sample collected after 68 hrs pumping @ 450 gpm 12/4/92

O-1561 (Rev. 11-85)

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

Laboratory Analysis Report

Date : 11/25/92
Invoice #: 7516
Client # : WAS-314 PO#: 129138
Name : Washoe County Utility Div.
Address : P.O. Box 11130
City : Reno State: NV Zip: 89520
Taken by : Washoe Cty - Dragan/Widmer

Sample	Collection Date	Collection Time	ARSENIC MG/L
HIDDEN VALLEY #5 - 175 GPM	11/21/92	9:00	0.005
HIDDEN VALLEY #5 - 280 GPM	11/21/92	10:20	0.005
HIDDEN VALLEY #5 - 385 GPM	11/21/92	12:00	0.004
HIDDEN VALLEY #5 - 490 GPM	11/21/92	13:45	0.003
HIDDEN VALLEY #5 - 600 GPM	11/21/92	15:30	0.004

Samples collected from Hidden Valley Production Well No. 5 at the end of each 100 minute step during the step-drawdown test.

Approved By: _____

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

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

Boise, Idaho
(208) 336-4145

2810 W. Charleston, Suite G67
Las Vegas, Nevada 89102
(702) 386-6747

DEC 1992
RECEIVED
WASHOE COUNTY
UTILITY
DIVISION

ANALYTICAL REPORT

Washoe County Utility Division
P.O. Box 11130
Reno, NV 89520

Job#:
Phone: 785-4743
Attn: Dan Dragon

Sampled: 11/25/92 Received: 11/25/92 Analyzed: 12/01/92
Alpha Analytical Number: WCU112592-01
Client I.D. Number: Hidden Valley Well #5 Well is 130 ft deep

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

Compound	Concentration ug/L	Detection Limit
8 Regulated Volatile Organic Compounds (VOC's)		
1. Benzene	ND	0.5 ug/L
2. Vinyl Chloride	ND	0.5 ug/L
3. Carbon Tetrachloride	ND	0.5 ug/L
4. 1,2-Dichloroethane	ND	0.5 ug/L
5. Trichloroethylene	ND	0.5 ug/L
6. p-Dichlorobenzene	ND	0.5 ug/L
7. 1,1-Dichloroethylene	0.6	0.5 ug/L
8. 1,1,1-Trichloroethane	8.4	0.5 ug/L
List 1 - Unregulated Compounds - All Systems		
9. Bromobenzene	ND	0.5 ug/L
10. Bromodichloromethane	ND	0.5 ug/L
11. Bromoform	ND	0.5 ug/L
12. Bromomethane	ND	0.5 ug/L
13. Chlorobenzene	ND	0.5 ug/L
14. Chlorodibromomethane	ND	0.5 ug/L
15. Chloroethane	ND	0.5 ug/L
16. Chloroform	ND	0.5 ug/L
17. Chloromethane	ND	0.5 ug/L
18. o-Chlorotoluene	ND	0.5 ug/L
19. p-Chlorotoluene	ND	0.5 ug/L
20. Dibromomethane	ND	0.5 ug/L
21. m-Dichlorobenzene	ND	0.5 ug/L
22. o-Dichlorobenzene	ND	0.5 ug/L
23. trans-1,2-Dichloroethylene	ND	0.5 ug/L
24. cis-1,2-Dichloroethylene	ND	0.5 ug/L
25. Dichloromethane	ND	0.5 ug/L
26. 1,1-Dichloroethane	ND	0.5 ug/L
27. 1,1-Dichloropropene	ND	0.5 ug/L
28. 1,2-Dichloropropane	ND	0.5 ug/L
29. 1,3-Dichloropropane	ND	0.5 ug/L
30. e,z-1,3-Dichloropropene	ND	0.5 ug/L
31. 2,2-Dichloropropane	ND	0.5 ug/L
32. Ethylbenzene	ND	0.5 ug/L
33. Styrene	ND	0.5 ug/L
34. 1,1,2-Trichloroethane	ND	0.5 ug/L
35. 1,1,1,2-Tetrachloroethane	ND	0.5 ug/L
36. 1,1,2,2-Tetrachloroethane	ND	0.5 ug/L
37. Tetrachloroethylene	0.7	0.5 ug/L
38. 1,2,3-Trichloropropane	ND	0.5 ug/L
39. Toluene	ND	0.5 ug/L
40. m,p-Xylenes (Isomeric Pair)	ND	0.5 ug/L
41. o-Xylene	ND	0.5 ug/L
List 3 - Monitoring Required at State Discretion		
42. Bromochloromethane	ND	0.5 ug/L
43. n-Butylbenzene	ND	0.5 ug/L
44. Dichlorodifluoromethane	ND	0.5 ug/L
45. Fluorotrichloromethane	ND	0.5 ug/L
46. Hexachlorobutadiene	ND	0.5 ug/L
47. Isopropylbenzene	ND	0.5 ug/L
48. p-Isopropyltoluene	ND	0.5 ug/L
49. Naphthalene	ND	0.5 ug/L
50. n-Propylbenzene	ND	0.5 ug/L
51. sec-Butylbenzene	ND	0.5 ug/L
52. tert-Butylbenzene	ND	0.5 ug/L
53. 1,2,3-Trichlorobenzene	ND	0.5 ug/L
54. 1,2,4-Trichlorobenzene	ND	0.5 ug/L
55. 1,2,4-Trimethylbenzene	ND	0.5 ug/L
56. 1,3,5-Trimethylbenzene	ND	0.5 ug/L

ND - Not Detected

* Organic Analyses from sample collected from Hidden Valley No.5 at the end of 69 hours of pumping @ 455 gpm

Approved By: Roger L. Scholl Date: 12/3/92
Roger L. Scholl, Ph.D.
Laboratory Director

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

Boise, Idaho
(208) 336-4145

2810 W. Charleston, Suite G67
Las Vegas, Nevada 89102
(702) 386-6747

ANALYTICAL REPORT

Washoe County Utility Division
P.O. Box 11130
Reno, NV 89520

Job#:
Phone: 785-4743
Attn: Dan Dragon

Sampled: 11/25/92 Received: 11/25/92 Analyzed: 12/05/92

Analysis Requested: EDB - 1,2-Dibromoethane
DBCP - 1,2-Dibromo-3-Chloropropane

Methodology: EPA Method 504

Results:

Client ID/ Lab ID	Parameter	Concentration ug/L	Detection Limit ug/L
Hidden Valley Well #5 /~~WCU112~~592-01	EDB	ND	0.03
	DBCP	ND	0.03

Analyses from sample collected from Hidden Valley Production Well No. 5 at the end of 68-hour constant discharge test @ 455 gpm Well is 138 ft. deep.

ND - Not Detected

Approved By: Roger L. Scholl Date: 12/8/92
Roger L. Scholl, Ph.D.
Laboratory Director

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

Laboratory Analysis Report

Date : 11/06/92
Invoice #: 7431
Client # : WAS-314 PO#: 129138
Name : Washoe County Utility Div.
Address : P.O. Box 11130
City : Reno State: NV Zip: 89520
Taken by : Terri Svetich

Sample	Collection Date	Time	ARSENIC MG/L
HIDDEN VALLEY MON. WELL #1	11/05/92	12:00	0.063

Sample Zone
Screened interval
185 - 225
w/ grout seal
from 0 to 180

Sample was collected from 5" diameter monitoring well located 36 ft North of Hidden Valley No. 5
Sealed to 180 ft.
Total depth 225 ft.

Approved By: S Groves

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

APPENDIX 2-Drilling and Testing Proposal

A proposed drilling and testing program prepared in June, 1992 was submitted to the Nevada State Engineer in support of a drilling waiver request. The proposed program and a request for a drilling waiver is attached.

June 22, 1992

Tom Gallagher, P.E.
Division of Water Resources
123 West Nye Lane
Carson City, Nevada 89710

Subject: Drilling Waiver Purity Water System Improvements

Dear Mr. Gallagher:

This correspondence is a request for a drilling waiver for exploratory purposes in the Eastern Truckee Meadows (NW 1/4 of SW 1/4, Section 16, T.19N, R.20E) under the provisions of N.R.S. 534.050(2). Washoe County is proposing a drilling plan described in Attachment 1, to locate an additional M & I production well for the Purity water system. We are simultaneously submitting an application for a change in point of diversion of a portion of the water rights associated with the Purity system.

If you have any questions please call me at 785-4743.

Sincerely,

JACK FERRIS
Water Rights Technician

JF:DD:llr
Attachment
cc: John M. Collins, Chief Sanitary Engineer
Dan Dragan, Hydrologist

Attachment 1

Drilling Plan - Additional Capacity for Purity Water System

Background

The Purity Water System, owned and operated by Washoe County, supplies its customers from two wells located near the Truckee River in the vicinity of Mill St. and Edison Way. Continued development in the service area has generated a need for additional peaking capacity. While the existing wells are probably capable of yielding additional capacity, studies indicate (WEN, 1985) there is a danger of upward migration of poor quality water from deeper aquifers if the shallow zones are over-pumped. Because of this potential for upward migration of poor quality water, we are proposing a drilling, testing and well construction program that will provide additional capacity while minimizing the risk of upward movement of poor quality water. Figure 1 shows the general location of the well site.

Drilling Plan

Monitoring and Sampling Well - The WEN Study and a review of nearby well depths in relation to water quality, suggest production wells (see Table 1) should not be more than 200 feet deep. We plan to drill a 2-inch diameter monitoring well about 250 feet deep, sealed, isolated and perforated in a zone below our anticipated production zone (see Figure 2). We plan to sample this well immediately after construction and development, and utilize these data to decide whether or not to drill a production well. We anticipate, if the geology is favorable, to complete the production well about 25-35 feet from the

monitoring well to a depth of less than 200 feet. Ideally, we hope a low permeability clay layer will allow us to separate the production zones between the deeper monitoring well and the shallower production well. This will allow us an early warning sampling point to identify any upward migration of poorer quality water toward the production well.

Production Well - The production well will be 12-inch diameter to an anticipated depth of less than 200 feet. It will be constructed to meet all standards and will include a step test for well efficiency and a 72-hour constant Q test for determining aquifer hydraulic parameters. The monitoring well will provide an additional data collection point to refine aquifer hydraulic parameters and vertical aquifer connection.

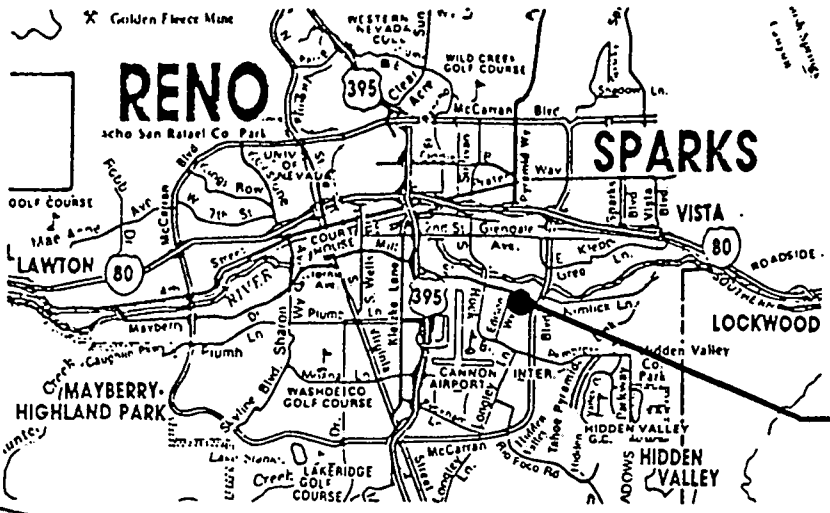
Both the production and monitoring wells will be contained within a permanent fenced compound. The monitoring well will be sampled quarterly for arsenic.

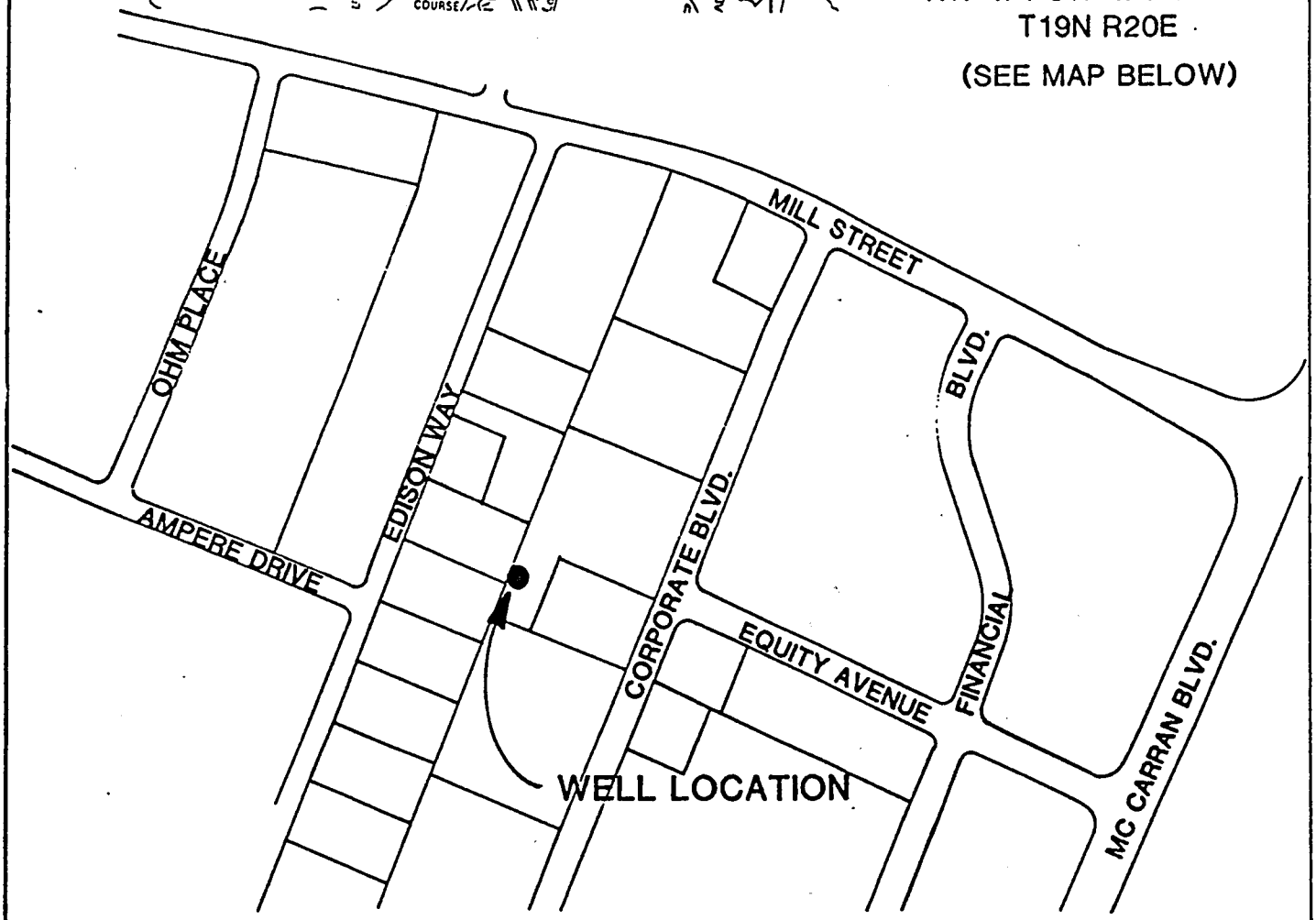
Table 1. Nearby Wells - Depth and Arsenic Concentrations

	Depth (ft.)	As (mgl)
Existing Purity well No. 3	189	0.023
United Construction Co. (Mill & Corporate Blvd.)	160	<0.003
Westpac Well @ Mill & Ohm St.	563	0.066
Westpac Well @ Terminal Wy. & Glendale	685	0.076
Westpac Poplar #2	665	0.090*
Westpac Poplar #6	300	0.008*

* These wells have been reported to be within 50 feet of each other.

Reference: Evaluation of the Water Supply from
Wells Alternative: Purity Utilities, Inc.
Docket 84-1003, January 9, 1985
Prepared for: State of Nevada
Public Service Commission
Prepared by: William E. Nork, Inc.





VICINITY MAP

PURITY WATER SYSTEM
MONITORING WELL & PRODUCTION WELL

FIG. 1

APPENDIX 3-WELL DRILLERS REPORT TO NEVADA STATE ENGINEER
GEOLOGIST LOG

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

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No.
Permit No.
Basin

NOTICE OF INTENT NO. 21179

1. OWNER WASHOE COUNTY UTILITY DIVISION
MAILING ADDRESS 1195 B. CORPORATE BLVD RENO, NV. 89502
ADDRESS AT WELL LOCATION WASHOE COUNTY UTILI
1195 B. CORPORATE BLVD RENO, NV 89502

2. LOCATION NW ¼ SW ¼ Sec. 16 T. 19 (N)S R. 20 E. WASHOE County
PERMIT NO. W371 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

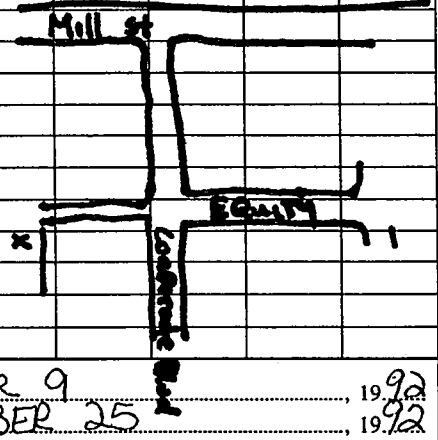
4. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test
☒ Municipal/Industrial ☐ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☒ Rotary ☐ RVC
☐ Air ☐ Other

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
TOP SOIL and CLAY		0	10	10
GRAVEL SAND FRACTURE ROCK, CLAY		10	102	92
GRAVEL SAND FRACTURE ROCK, CLAY		102	138	36

Hidden Valley No. 5 Production Well



Date started NOVEMBER 9, 1992
Date completed NOVEMBER 25, 1992

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☒ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
450	34 FEET	68

8. WELL CONSTRUCTION
Depth Drilled 138 Feet Depth Cased 138 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
17½ Inches	0 Feet	138 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
12	33.38	.250	0	138

Perforations:
Type perforation Johnson HYCAP WIRE WRA
Size perforation SCREEN 0.090"
From 78 feet to 98 feet BU
From 78 feet to 138 feet SC
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 50
Placement Method: ☒ Pumped ☐ Poured
Seal Type: ☒ Neat Cement ☐ Cement Grout ☐ Concrete Grout

Gravel Packed: ☒ Yes ☐ No
From 50 feet to 138 feet

9. WATER LEVEL
Static water level 76 feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature COLD °F Quality GOOD

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name SARGENT IRRIGATION CO. (Contractor)
Address 9955 NORTH VIRGINIA ST (Contractor)
RENO, NV. 89506
Nevada contractor's license number issued by the State Contractor's Board 21246
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1541
Signed Dan Tramp (By driller performing actual drilling on-site or contractor)
Date DECEMBER 11, 1992

(Rev. 3-91)

USE ADDITIONAL SHEETS IF NECESSARY

(O)-627

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

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No.
Permit No.
Basin

NOTICE OF INTENT NO. 21172

1. OWNER WASHOE COUNTY UTILITY DIVISION
MAILING ADDRESS 1195 B. CORPORATE BLVD RENO, NV 89502
ADDRESS AT WELL LOCATION WASHOE COUNTY UTILITY 1195 B CORPORATE BLVD RENO, NV. 89502

2. LOCATION NW ¼ SW ¼ Sec 16 T 19 N/S R 20 E WASHOE County
PERMIT NO. M-0575 (Issued by Water Resources) Parcel No. WASHOE COUNTY PERMIT NO.: 004603 (Subdivision Name)

3. WORK PERFORMED: ☒ New Well ☐ Replace ☐ Recondition ☐ Deepen ☐ Abandon ☐ Other

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

5. WELL TYPE: ☐ Cable ☒ Rotary ☐ RVC ☐ Air ☐ Other

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
TOP SOIL, CLAY, SAND		0	7	7
SAND, FRACTURE ROCK		7	65	58
SAND, FRACTURE ROCK		65	93	28
LITTLE CLAY, SAND, FRACTURE ROCK		93	122	29
SAND, FRACTURE ROCK LITTLE CLAY		122	153	31
SAND, FRACTURE ROCK		153	184	31
SAND, GRAVEL		184	224	40

Hidden Valley No.5 monitoring well 3¢ North of Production well.

Date started OCTOBER 29, 1992
Date completed NOVEMBER 5, 1992

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☒ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
100		

8. WELL CONSTRUCTION
Depth Drilled 224 Feet Depth Cased 224 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
9 7/8 Inches	0 Feet	224 Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
5	10.79	.188	0	224

Perforations:
Type perforation SINGLE
Size perforation 1/8 SLOT
From ± 2 feet to 186 feet BLA
From 186 feet to 224 feet PE
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 180 FEET
Placement Method: ☒ Pumped ☐ Poured
Seal Type: ☒ Neat Cement ☐ Cement Grout ☐ Concrete Grout

Gravel Packed: ☐ Yes ☐ No
From 180 feet to 224 feet

9. WATER LEVEL
Static water level 16 feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature COLD °F Quality GOOD

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name SARGENT IRRIGATION CO (Contractor)
Address 9955 NORTH VIRGINIA ST (Contractor)
RENO, NV. 89506
Nevada contractor's license number issued by the State Contractor's Board 21246
Nevada driller's license number issued by the Division of Water Resources the on-site driller 1541
Signed Dan Stamps (By driller performing actual drilling on site or contractor)
Date DECEMBER 11, 1992

(Rev. 3-91) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

GEOLOGIST LOG/HIDDEN VALLEY #5

MONITORING WELL

0-10 Topsoil, mixed gravel and sand

10-15 Coarse, multicolored cobbles and gravels, rounded — 30 oct 92

15-20 Medium dark multicolored sand, some Pyrite flakes alternating with coarser sand, gravel, cobbles: Rounded — 20ft @ 3:00 pm

20-25 Same as above

25-29 Cleaner sand, smoother drilling, more quartz rounded.

29-34 Coarse sand and gravel, rounded. Some brown sandy clay mixed

34-50 Coarse multicolored, rounded cobbles & gravels — 15 ft. of fill; could add drill collar. Redr several times. Increas mud density

50-65 Coarse sand, gravel, cobbles. Rounded hole taking fluid — Added collar @ 5:40 p.

31 oct 92

65-85 Unconsolidated, well rounded sand, gravel cobbles. Lenses of medium sand indicated by rapid, easy drilling — 80ft @ 10:05

85-88 Lighter brown well rounded sands and gravels, occasional soft medium sand lenses (indicated by smooth, rapid drilling).

88-91 Some brown silty clay mixed with rounded gravels

91-93 Medium to coarse sand. Smooth rapid drilling

93-105 medium to coarse sand, some gravel (~25%)

105-114 Increasing gravel (50%) — 110ft. @ 1235

Depth (ft.)

114-123 - medium to coarse sand

123-130 - medium to coarse sand

130-137 - Increasing gravel, rounded

137-140 - medium to coarse sand

140-145 - Battleship blue/gray clay appears between 139-140 mixed with sand & gravel. Grades to mostly clay @ 145'. No H_2S smell in clay

145-153 - Mixed brown and gray clay w/ some fine sand lenses. Poor return on samples between 149-153 ft.

153-164 - Poor sample returns but appears to be mostly coarse to medium sand and gravel

164-177 Coarse sand and gravel, Rapid drilling to 164'

177-178 brown and grey clay appears

178-184 Sand and gravel with brown and gray clay

184-210 Sand w/ gray clay and gravel. Increasing clay with depth. Boulder @ 195 ft.

210-212 Medium to coarse sand. Smooth rapid drilling

212-213 Slower drilling, drill chatter, possible clay layer

213-215 medium to coarse sand. smooth drilling

215-218 Well rounded sand gravel and cobbles

218-221 Increasing gray clay, rounded river gravels

221-230 Soft medium sand lense, intermittent gray clay sand turns darker - black sand

230-247 Very soft unconsolidated medium black sand Very rapid drilling. Occasional gray clay

247-256 Same as above. TD @ 256'

collected sample for sieve analysis
115-117, 120-122
123' @ 1420
11/1/92
153' @ 0840
184 @ 0950

GEOLOGIST LOG / HIDDEN VALLEY #5
PRODUCTION WELL

E. EVANS

0-20 Volcanic gravel and sand. Rounded

20-25 Coarse angular volcanic sand w/ Pebble shards

25-30 Mixed volcanic coarse sand and volcanic gravel Tuffaceous components. Sand sub-rounded to round

30-36 Mixed volcanic coarse sand. Increase in Tuff and felsic volcanic sand. (15%) Minor small gravel. Quieter drilling. Gravel, cobble lense @ 33'

36-42 Coarse to very coarse brown, green, black and orange volcanic sand. Sand sub-angular to round. Volcanic gravel (25%). Increased mud density - sample increased to 50-60% angular to sub-rounded volcanic gravels. Minor orange alteration staining large cobble @ 38 ft.

42-45 Multicolored small volcanic gravel with 20% volcanic sand. Gravel contains Tuff, andesite and minor rhyolite. Majority is subangular. Increasing volcanic sand with some quartz and felsic components @ 45'.

45-54 Coarse volcanic sand w/ 30% small volcanic gravel. Quartz and felsic lithics found in sand. Sand and gravel subangular to round.

54-57 ↑ drill chatter. Volcanic gravel and sand. Increasing dark volcanic gravels @ 56 ft. ↑ drill chatter

57-60 Volcanic gravel, andesite rich w/ larger pebbles. 10% volcanic sand. Drilling slows @ 60 ft rounded gravel appears.

GEOLOGIST LOG / HIDDEN VALLEY #5 PRODUCTION WELL

E. EVANS

60-62	Volcanic gravel w/ 15-25% light tan clay. clay mostly slick.
62-70	Coarse volcanic sand and gravel. Mostly dark angular fragments — D. DRAGAN
70-80	same as above
80-90	Coarse sand and gravel w/ some brown silty clay mixed
90-95	Gravelly brown clay
95-100	medium to coarse gravel, grading finer
100-105	Grading finer, rounded small gravels
105-110	Unconsolidated medium to fine gravels, medium sand
110-120	Coarse sand and gravel. alternating lenses of sand and gravel. Indicated by variable drilling rates. Occasional soft, rapid drilling.
120-125	Medium to coarse sand and gravel
125-130	Silty coarse sand and gravel w/ some grey clay
130-133	Medium to coarse sand and gravel
134-139	Increasing grey clay. TD in clay @ 139

APPENDIX 4-Test Pumping Data and Analyses

The test pumping program utilized a submersible pump powered by a "AGGREKO" quiet running generator. Flow rates were measured using a $4^3/_4$ inch diameter orifice weir with a $6^1/_4$ inch discharge pipe. Water was pumped into a concrete irrigation pipe and discharged into a drainage canal over 1/4 mile from the pumping well.

Two separate tests were run. The first was a step-drawdown test run for 100 minute intervals at five different flow rates. The step-drawdown test is primarily used to determine well efficiency and to determine at which rate to run the constant discharge test. The second test was a 68 hour constant discharge test at a pumping rate of 455 gallons per minute. The constant discharge data permits an evaluation of aquifer transmissivity and indicates whether or not the radius of influence from pumping encounters any significant recharge or discharge boundaries.

Summary of Step-Drawdown tests

The step drawdown data showed the following well efficiencies at the specified flow rates:

DISCHARGE (GPM)	EFFICIENCY (%)
175	98
290	96
385	95
490	94
600	92

Copies of the data and graphs used to determine the above efficiencies are attached.

Summary of Constant Discharge Test

The Constant Discharge test showed the following Transmissivity values:

TYPE OF DATA	TRANSMISSIVITY
Drawdown	28,000 gpd/ft.
Recovery	30,000 gpd/ft.

Both data sets indicated a recharge boundary was encountered during testing. The drawdown data plots on semi-logrithmic paper (copies attached) show the recharge boundary was encountered after about 20 minutes of pumping. The recharge boundary could be caused by direct infiltration from a surface water source, a thickening of the aquifer or an increase in the permeability of the materials in

the aquifer farther from the pumping well.
The monitoring well, sealed below a clay layer and perforated below the producing zone of the production well did not show any drawdown that could directly be attributed to the pumping well. Drawdown began to show at about 3000 minutes into the constant discharge test but continued monitoring of the well indicates water levels are continuing to fluctuate as a response to other interference. Because the monitoring well was isolated in a zone different from the production well and the data showed other interference effects, the data could not be used to calculate aquifer parameters, including Transmissivity and Coefficient of Storage. Data and graphs of the data collected from the monitoring well are attached.

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Hidden Valley #5
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST STEP DRAWDOWN
HOW Q MEASURED ↑ 4 3/8 x 6 1/8 orifice
HOW WL's MEASURED ↑ sounder
PUMPED WELL NO. HIDDEN VALLEY #5
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL

M.P. for WL's Top of PVC (1") elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 21NOV92 time 0710
PUMP OFF: date 21NOV92 time 1530

TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 13.45 TOP OF PVC					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)
710 AM		1			25.12			11.67		5"	175	ADJUSTING Q
		2			23.82			10.37				
		3			23.60			10.15				
		5			24.00			10.55				
		6			24.12			10.67				
		7			24.24			10.79			175	
		9			24.32			10.87				
		10			24.40			10.95				
		12			24.56			11.11				
		14			24.52			11.07				Q ↑
		16			25.00			11.55				
		18			25.20			11.75				
		20			25.20			11.75				
		25			25.32			11.87				
		30			25.60			12.15				
		35			25.68			12.23			175	
		40			25.73			12.28				
		45			25.75			12.30				
		50			25.79			12.34				SP Cap. 14.18
		60			25.82			12.37				
		70			25.86			12.41				
		80			25.86			12.41				
		90			25.89			12.44				Collected As Sample
		99			25.90			12.45				SP Cap 14.05
										13"	280	Q ↑
		102	2		31.62			18.17				
		105	5		32.14			18.69				
		110	10		32.43			18.98				
9:10		120	20		32.93			19.48				14.37 Sp Cap
9:20		130	30		33.05			19.60				Q ↑
9:30		140	40		33.08			19.63				
9:40		150	50		33.14			19.69				
9:50		160	60		33.15			19.70				
10:00		170	70		33.18			19.73				
10:10		180	80		33.20			19.75				
10:20		190	90		33.24			19.79				Collected As Sample
10:30		200	100		33.25			19.80				14.14 SP Cap

JTIL-16

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

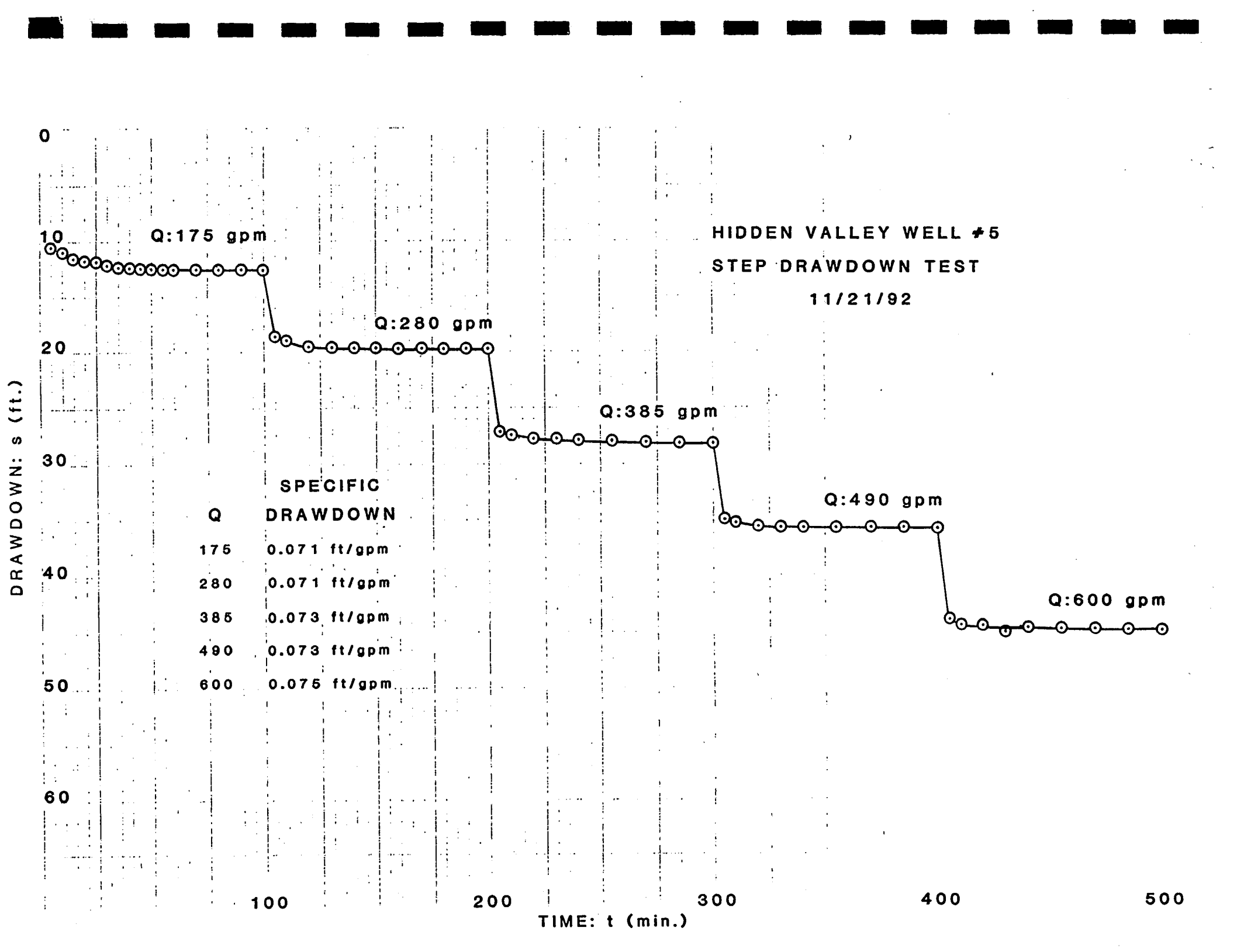
WELL HIDDEN VALLEY #5
PUMPING/OBSERVATION WELL
PUMPING/RECOVERY DATA
PAGE 2 OF 2

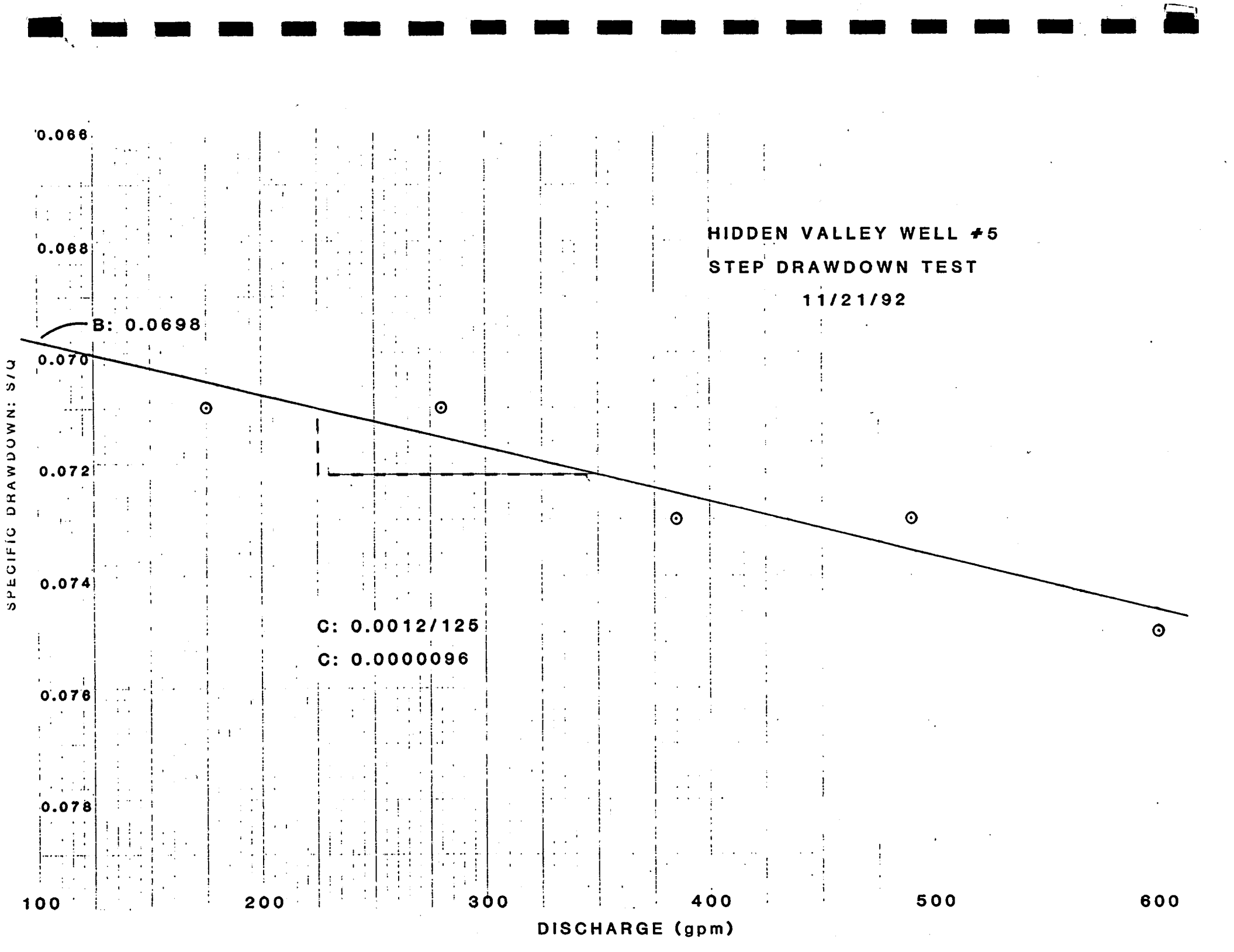
TYPE of PUMPING TEST STEP DRAWDOWN
HOW Q MEASURED
HOW WL's MEASURED
PUMPED WELL NO. HIDDEN VALLEY #5
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL

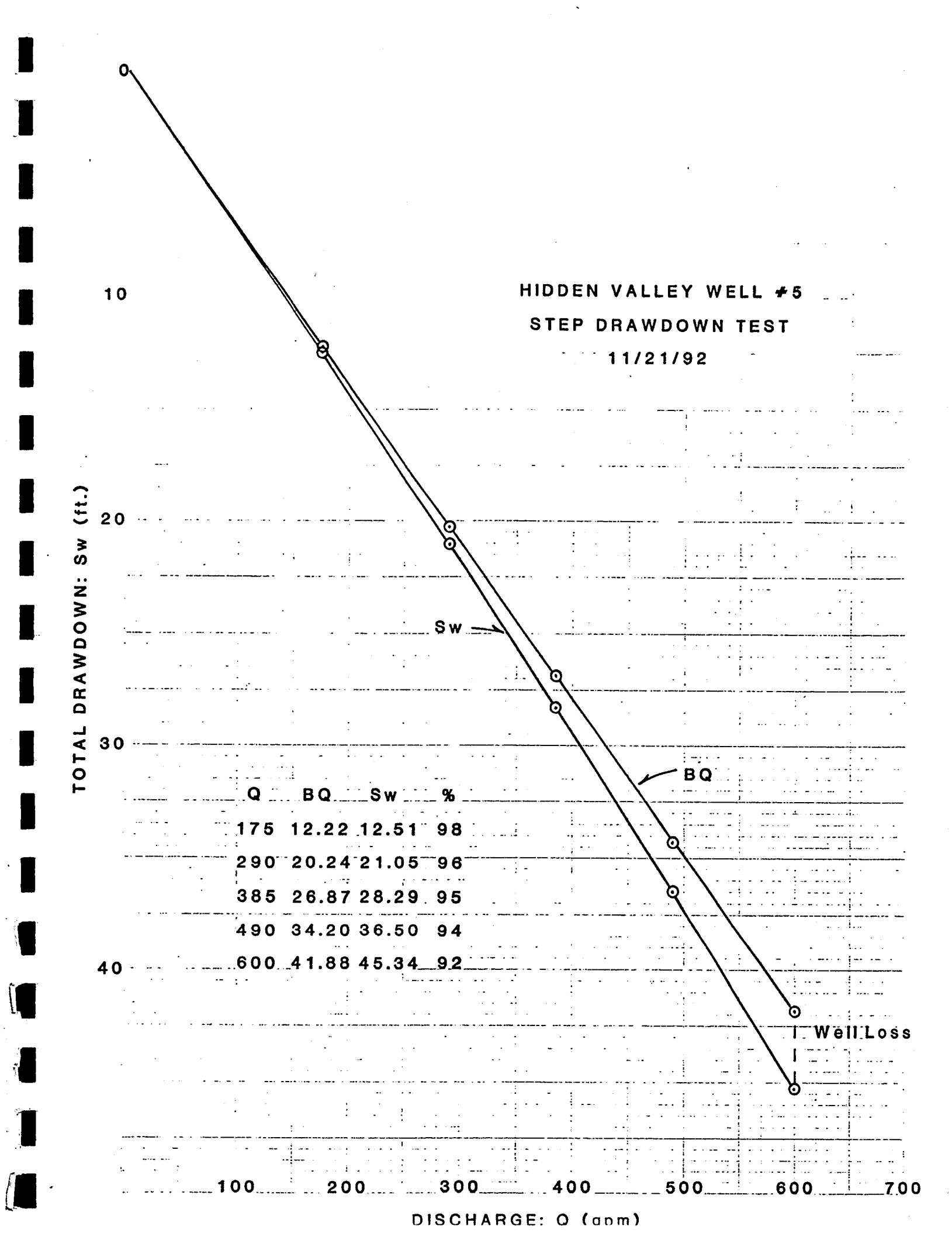
M.P. for WL's elev.
DEPTH of PUMP/AIRLINE 63' Intake/ft
% SUBMERGENCE: initial ; pumping
PUMP ON: date 21NOV92 time 0710
PUMP OFF: date 21NOV92 time 1530

TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 13.45					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins/hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'		%	Q gpm	(NOTE ANY CHANGES IN OBSERVERS)
10:30		200										
10:32		202	2		39.99			26.54		25"	385	STEP #3
10:35		205	5		40.55			27.10				14.20 sp cap
10:40		210	10		40.88			27.43				
10:50		220	20		41.18			27.73				
11:00		230	30		41.30			27.85				
11:10		240	40		41.41			27.96				
11:25		255	55		41.44			27.99				
11:40		270	70		41.50			28.05				13.72 gpm/ft
11:55		285	85		41.55			28.10				Collected Sample
12:10		299	99		41.58			28.13				
		302	2.0		47.90			34.45		40"	490	
			5.0		48.48			35.03				13.86
			10.0		48.80			35.35		40"		
			20		49.05			35.60		40		
			30		49.18			35.73		40		
			40		49.19			35.74				
			55		49.26			35.81				
			70		49.26			35.81				
			85		49.31			35.86				
			99		49.33			35.88		40	490	13.65 sp cap
		402	2		56.65			43.20		60	600	
			5		57.48			44.03		≥60		
			10		57.85			44.40		≥60		
			20		57.98			44.53		60		
			30		58.57			45.12		≤60		Q?
			40		58.28			44.83		≥60		
			55		58.36			44.91		60		
			70		58.43			44.98		60	600	
			85		58.46			45.01		60		13.33 sp cap
		500	100		58.46			45.01				13.33 %

TIL-16


HIDDEN VALLEY WELL #5
STEP DRAWDOWN TEST
11/21/92
Q:175 gpm
Q:280 gpm
Q:385 gpm
Q:490 gpm
Q:600 gpm
SPECIFIC
Q DRAWDOWN
175 0.071 ft/gpm
280 0.071 ft/gpm
385 0.073 ft/gpm
490 0.073 ft/gpm
600 0.075 ft/gpm
DRAWDOWN: s (ft.)
0
10
20
30
40
50
60
100
200
300
400
500
TIME: t (min.)


HIDDEN VALLEY WELL #5
STEP DRAWDOWN TEST
11/21/92
B: 0.0698
C: 0.0012/125
C: 0.0000096
SPECIFIC DRAWDOWN: s/Q
0.066
0.068
0.070
0.072
0.074
0.076
0.078
100
200
300
400
500
600
DISCHARGE (gpm)


HIDDEN VALLEY WELL #5
STEP DRAWDOWN TEST
11/21/92
TOTAL DRAWDOWN: Sw (ft.)
0
10
20
30
40
Sw
BQ
Well Loss
Q BQ Sw %
175 12.22 12.51 98
290 20.24 21.05 96
385 26.87 28.29 95
490 34.20 36.50 94
600 41.88 45.34 92
100
200
300
400
500
600
700
DISCHARGE: Q (gpm)

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Hidden Valley #5
(PUMPING) / OBSERVATION WELL
(PUMPING) / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED ORIFICE WEIR 4 3/8" x 6 1/4"
HOW WL's MEASURED Electric Sounder
PUMPED WELL NO. _____
RADIUS of PUMPED WELL _____
DISTANCE from PUMPED WELL _____

M.P. for WL's TOP OF PVC elev. _____
DEPTH of PUMP/AIRLINE _____ wrt _____
% SUBMERGENCE: initial _____ ; pumping _____
PUMP ON: date 22NOV92 time 1610
PUMP OFF: date 25NOV92 time 1200

TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 14.40					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'		inches	Q (gpm)	(NOTE ANY CHANGES IN OBSERVERS)
		1			41.30			26.90				D. DRAGAN
		2			43.56			29.16			450	REDUCED Q FROM 500 to 450 because
		3			42.48			28.08				pump would probably not hold 500 gpm
		4			42.80			28.40				through test.
		5			43.14			28.74		35"	458	
		6			43.53			29.13				< 5ppm Sand
		7			43.78			29.38				w/ Rossum sand tester
		8			43.98			29.58				
		9			44.30			29.90				
		10			44.46			30.06				
		12			44.71			30.31				
		14			44.92			30.52				
		16			45.08			30.68		35"	458	Q adjust ↑
		18			45.31			30.91				
		20			45.45			31.05				
		25			45.75			31.35				
		30			45.93			31.53				
		35			46.06			31.66				Q ↑
		40			46.08			31.68				
		45			46.16			31.76				
		50			46.24			31.84		35"	458	Q ↑ adjust
		60			46.40			32.00				
		70			46.44			32.04				
		81			46.52			32.12				Q ↑
		90			46.62			32.22				
		100			46.67			32.29				
		120			46.74			32.34				M. WIDMER
		140			46.76			32.36				
		160			46.79			32.39				
		180			46.82			32.42				
		200			46.88			32.48				
		230			46.91			32.51				
		260			46.93			32.53				
		300			46.94			32.54				
		360			46.96			32.56				
		420			46.98			32.58				
		480			46.98			32.58				
		540			46.98			32.58				
		660			47.00			32.60				

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

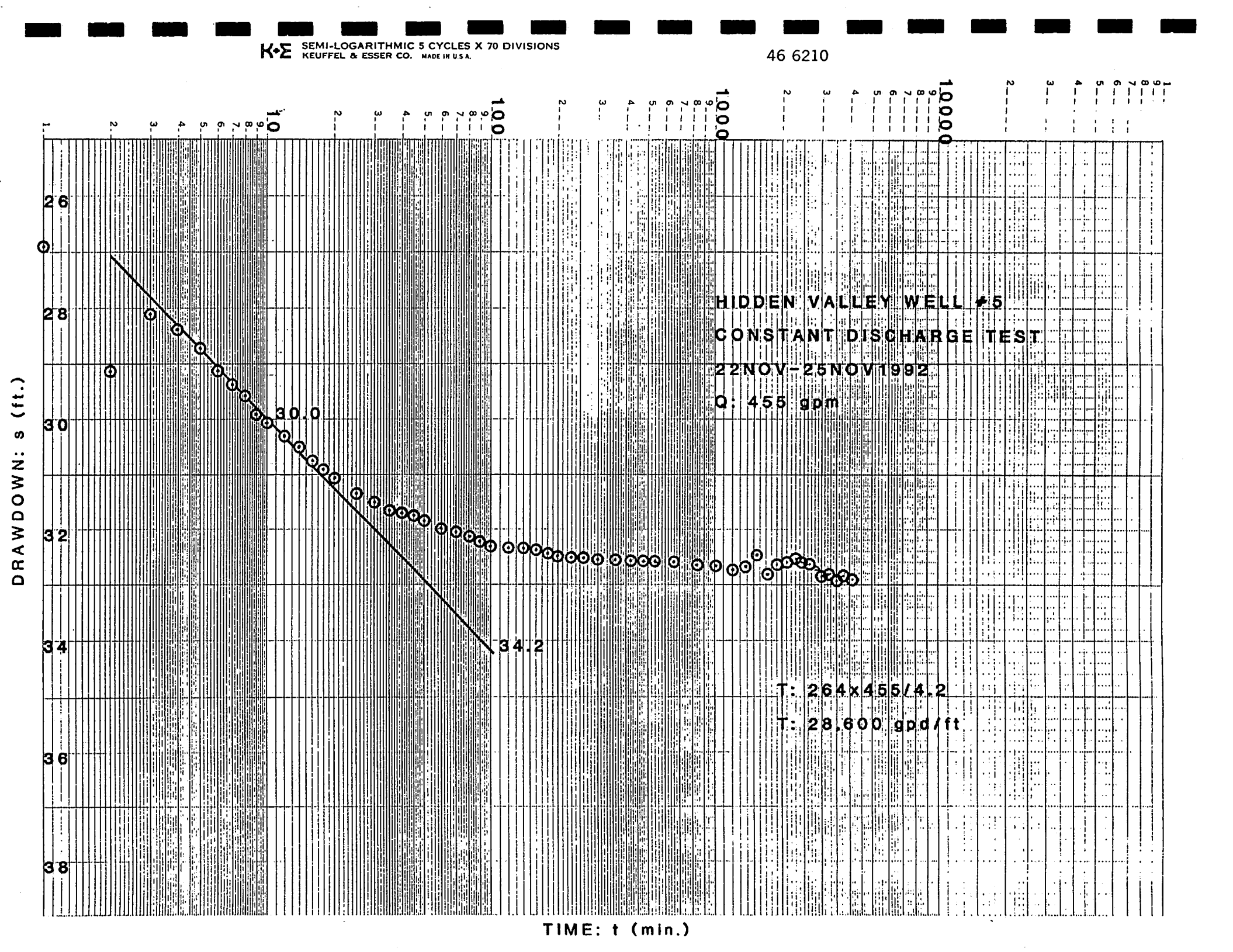
PUMPING TEST DATA

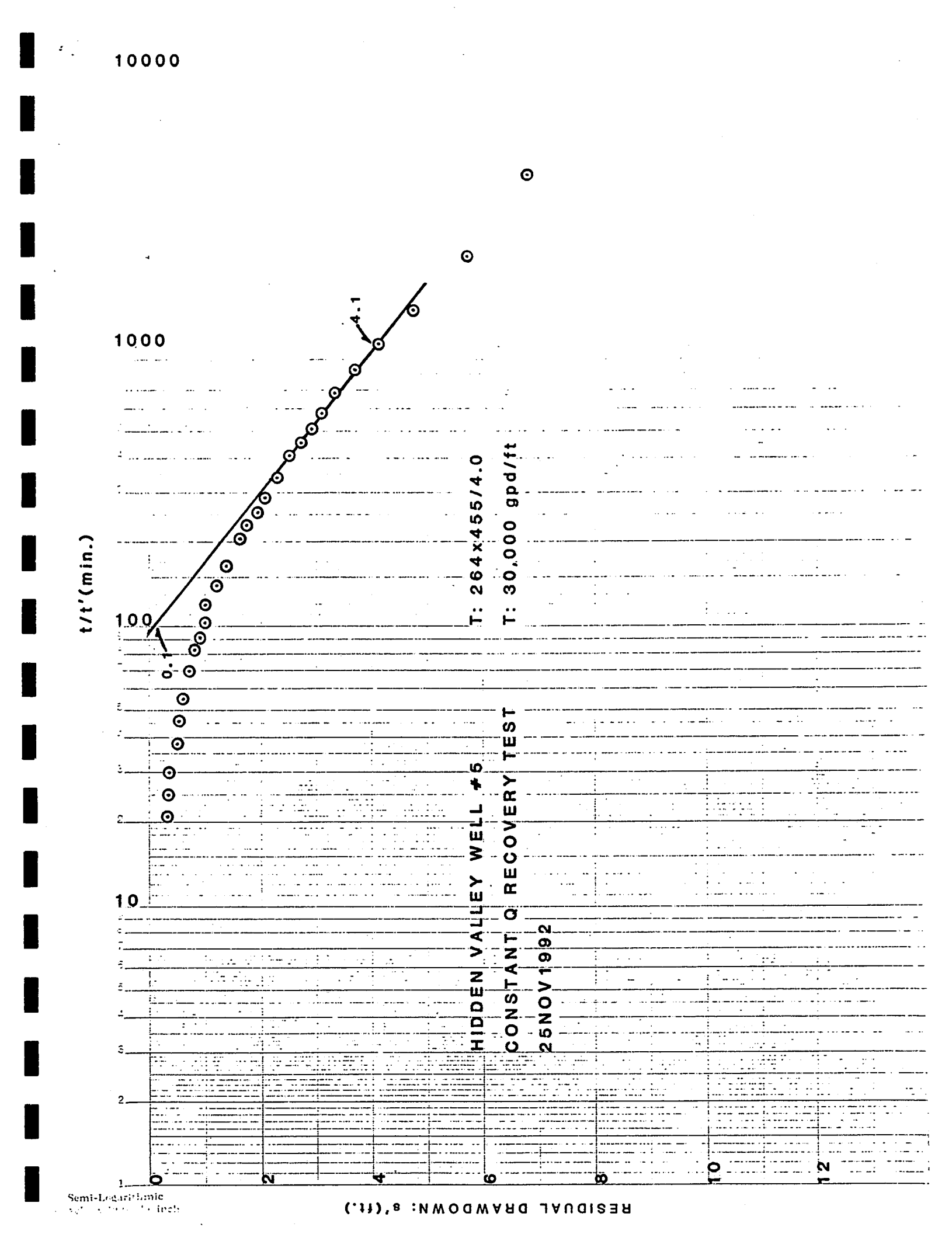
WELL Hidden Valley #5
(PUMPING) / OBSERVATION WELL
(PUMPING) / RECOVERY DATA
PAGE 2 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED _____ M.P. for WL's _____ elev. _____
HOW WL's MEASURED _____ DEPTH of PUMP/AIRLINE _____ wrt _____
PUMPED WELL NO. _____ % SUBMERGENCE: initial _____ ; pumping _____
RADIUS of PUMPED WELL _____ PUMP ON: date 22NOV92 time 1610
DISTANCE from PUMPED WELL _____ PUMP OFF: date 25NOV92 time 1200

TIME t = at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL					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)
		1620			47.05			32.65		35"	458	E. EVANS
		1200			47.14			32.74				D. DRAGAN
		1380			47.04			32.64				E. EVANS
		1550			46.82			32.42				E. EVANS Q↑
		1740			47.22			32.82		34.75		M. Widmer Q↑
		1910			47.02			32.62		35.25		
		2090			47.00			32.60		35.25		
		2270			46.96			32.56		35"		
		2450			47.00			32.60				Q↑
		2630			-					-		-
		2660			47.02			32.62				D. DRAGAN
		2810			-					-		"
		3000			47.25			32.85		35½		"
		3240			47.22			32.82				
		3470			47.34			32.94				R. VanHoozer
		3740			47.28			32.88				
		3980			47.29			32.89		35.5"		
		4065			47.34			32.94				

ITIL-16


K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6210
HIDDEN VALLEY WELL #5
CONSTANT DISCHARGE TEST
22NOV-25NOV1992
Q: 455 gpm
30.0
34.2
T: 264x455/4.2
T: 28,600 gpd/ft
DRAWDOWN: s (ft.)
TIME: t (min.)


10000
1000
100
10
1
t/t'(min.)
4.1
0.1
T: 264x455/4.0
T: 30,000 gpd/ft
HIDDEN VALLEY WELL #6
CONSTANT Q RECOVERY TEST
25NOV1992
0
2
4
6
8
10
12
RESIDUAL DRAWDOWN: s'(ft.)
Semi-Logarithmic
inch

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Hidden Valley Well #5
(PUMPING) / OBSERVATION WELL
PUMPING / (RECOVERY DATA)
PAGE 1 OF 1

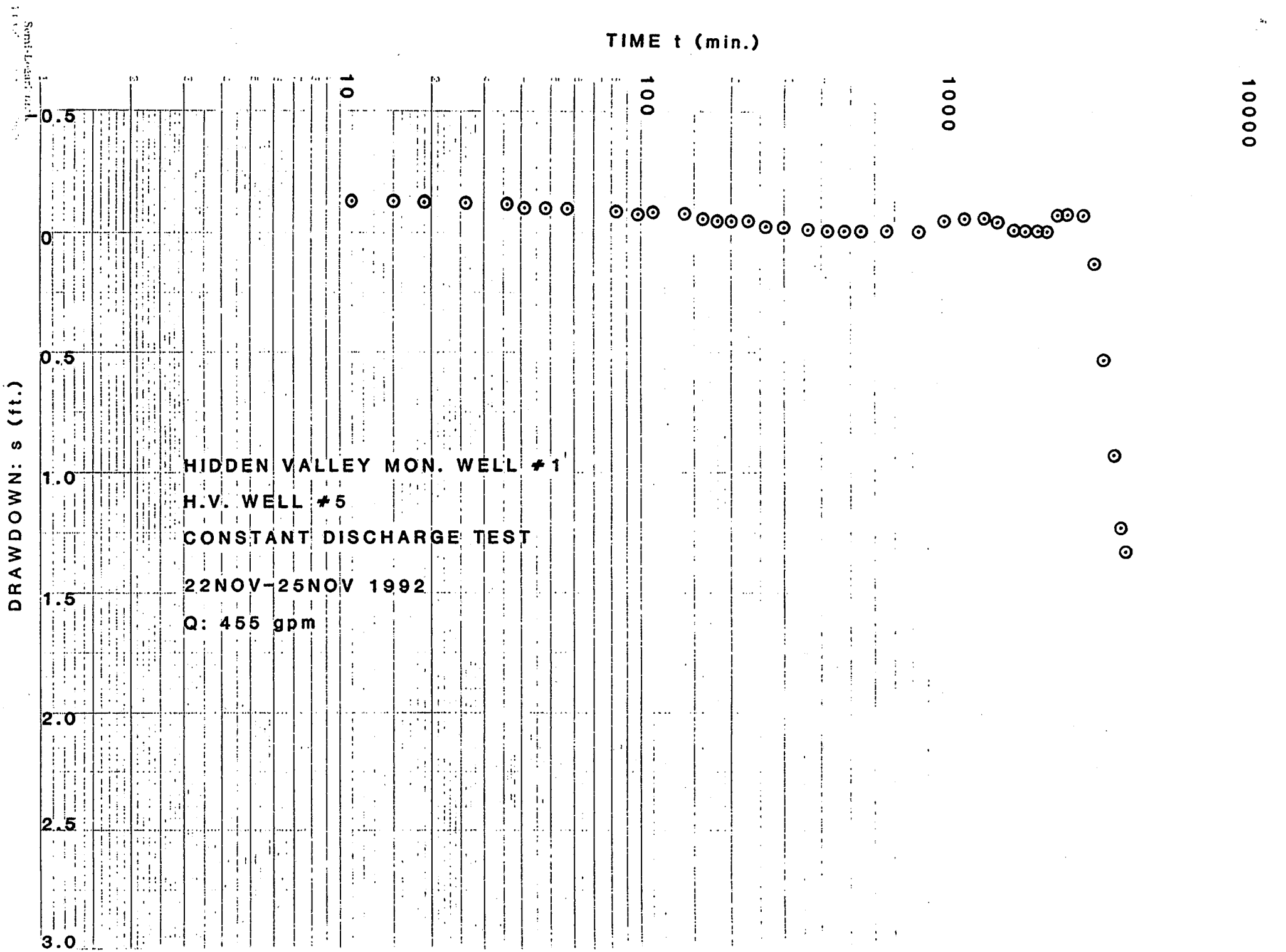
TYPE of PUMPING TEST Constant Q
HOW Q MEASURED Orifice Plate 4 3/8 x 6 3/4"
HOW WL's MEASURED Electric Sounder
PUMPED WELL NO.
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL

M.P. for WL's TOP 1" PVC STILL WELL elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 22Nov92 time 1610
PUMP OFF: date 25Nov92 time 1210

TIME t = 4086 at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 14.40					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)
1155		4065			47.34							
1211		4080	1	4080	21.20			6.80				79.3%
1212		4082	2	2040	20.10			5.70				
1213		4083	3	1361	19.16			4.76				
1214		4084	4	1021	18.55			4.15				
1215		4085	5	817	18.10			3.70				
1216		4086	6	681	17.76			3.36				
1217		4087	7	584	17.51			3.11				
1218		4088	8	511	17.26			2.86				
1219		4089	9	454	17.11			2.71				
1220		4090	10	409	16.92			2.52				
1222		4092	12	341	16.64			2.24				
1224		4094	14	292	16.44			2.04				
1226		4096	16	256	16.32			1.92				
1228		4098	18	228	16.13			1.73				
1230	20	4100	20	205	16.00			1.60				95.1%
1235		4105	25	164	15.77			1.37				
1240		4110	30	137	15.60		—	1.20				
1245		4115	35	118	15.42			1.02				
1250		4120	40	103	15.41			1.01				
1255		4125	45	92	15.30			0.90				
1:00		4130	50	83	15.22			0.82				
1:10		4140	60	69	15.10			0.70				
1:25		4155	75	55	15.00			0.60				98.2%
1:40		4170	90	46	14.92			0.52				98.4%
2:00		4190	110	38	14.88			0.48				
2:30		4220	140	30	14.78			0.38				
3:00		4250	170	25	14.78			0.38				
3:35		4285	205	21	14.74			0.34				99%

UTIL-16

HV#1


TIME t (min.)
10
100
1000
10000
DRAWDOWN: s (ft.)
0.5
0
0.5
1.0
1.5
2.0
2.5
3.0
HIDDEN VALLEY MON. WELL #1
H.V. WELL #5
CONSTANT DISCHARGE TEST
22NOV-25NOV 1992
Q: 455 gpm

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Hidden Valley #5 mw.
PUMPING / (OBSERVATION WELL)
(PUMPING) / RECOVERY DATA
PAGE 1 OF 2

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED orifice 4 3/8 x 6 1/4"
HOW WL's MEASURED Electric Sounder
PUMPED WELL NO. Hidden Valley Well #5
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 36 FEET

M.P. for WL's Top 4" CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 22 Nov '92 time 410
PUMP OFF: date 25 NOV 92 time 1200

TIME t = at t' = 0					WATER LEVEL DATA STATIC WATER LEVEL 13.20				WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME mins / hrs	t	t'	t/t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'	inches	Q gpm	(NOTE ANY CHANGES IN OBSERVERS)
0900		1			13.14				40"	490	
		2			13.10						
		3			13.14						pump cut out
		4									
		5									
0910		1									RESTART 4.10 P
		2									
		3									
		4									
		5									
		Restart									
		11			13.08			-.12			
		15			13.07			-.13			
		19			13.07			-.13			
		26			13.07			-.13			
		36			13.08			-.12			
		41			13.09			-.11			
		48			13.10			-.10			
		57			13.10			-.10			
		83			13.11			-.09			
		98			13.12			-.08			
		110			13.11			-.09			
		139			13.12			-.08			
		162			13.14			-.06			
		179			13.15			-.05			
		201			13.15			-.05			
		229			13.15			-.05			
		259			13.17			-.03			
		301			13.17			-.03			
		361			13.18			-.02			
		420			13.18			-.02			
		480			13.18			-.02			
		540			13.18			-.02			
		660			13.18			-.02			
		840			13.18			-0.02			
		1020			13.15			-0.05			E.E.
		1200			13.19			-0.06			
		1380			13.14			-0.06			
		1560			13.15			-0.05			

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

HIDDEN VALLEY
WELL ~~MONITORING WELL~~ #5
PUMPING / (OBSERVATION WELL)
(PUMPING) / RECOVERY DATA
PAGE 2 OF 2

TYPE of PUMPING TEST CONSTANT Q
HOW Q MEASURED ORIFICE 4 3/8" x 6 1/4"
HOW WL's MEASURED ELECTRIC SOUNDER
PUMPED WELL NO. HIDDEN VALLEY WELL #5
RADIUS of PUMPED WELL
DISTANCE from PUMPED WELL 36 FEET

M.P. for WL's TOP 4" CASING elev.
DEPTH of PUMP/AIRLINE wrt
% SUBMERGENCE: initial ; pumping
PUMP ON: date 22NOV92 time 1610
PUMP OFF: date 25NOV92 time 1200

TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 13.20					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)
2110		1740			13.18			-.02				
2400		1910			13.18			-.02				
0300		2090			13.18			-.02				
0600		2270			13.18			-.02				
0900		2450			13.12			-.08				E.E.
1230		2630			13.12			-.08				DD
1610 T		3000			13.12			-.08				
1015 P		3240			13.32			.12				DD
0200		3470			13.72			.52				RVH
0630		3740			14.12			.92				E.E.
1030		3980			14.43			1.23				E.E.
1155		4065			14.53			1.33				E.E.

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

WELL Hidden Valley MW # 1
PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 1 OF _____

TYPE of PUMPING TEST Constant Q
HOW Q MEASURED Electric Sounder
HOW WL's MEASURED _____
PUMPED WELL NO. Hidden Valley No. 5
RADIUS of PUMPED WELL _____
DISTANCE from PUMPED WELL 36 ft.

M.P. for WL's Top 4" casing elev. _____
DEPTH of PUMP/AIRLINE _____ wrt _____
% SUBMERGENCE: initial _____ ; pumping _____
PUMP ON: date 22NOV92 time 1610
PUMP OFF: date 25NOV92 time 1210

TIME (t = 4080 at t' = 0)					WATER LEVEL DATA (STATIC WATER LEVEL 13.20)					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)
1214		4084	4		14.68							
		4090	10		14.67							
		4096	16		14.67							
		4100	20		14.67							
		4105	25		14.66							
		4110	30		14.66							
		4120	40		14.66							
		4125	45		14.66							
		4140	60		14.66							
		4170	90		14.68							
		4220	140		14.72							
3:00		4250	170		14.76							
3:35		4285	205		14.78							

UTIL-16

MW1

APPENDIX 5-Bid and final cost summary

WASHOE COUNTY

"To Protect and To Serve"

UTILITY DIVISION
DEPARTMENT OF PUBLIC WORKS
John M. Collins, Chief Sanitary Engineer

1195-B CORPORATE BOULEVARD
POST OFFICE BOX 11130
RENO, NEVADA 89520
PHONE: (702) 785-4743

September 3, 1992

TO: John A. MacIntyre, County Manager

THROUGH: Craig V. McConnell, Public Works Director

FROM: John M. Collins, Chief Sanitary Engineer

SUBJECT: Board of County Commissioners Agenda Item
Award Bid for Purity (Hidden Valley Water System) Well Construction

RECOMMENDATION

The Chief Sanitary Engineer recommends that the Board of County Commissioners:

1. Award the bid for construction of a water well for the Hidden Valley water system to the lowest, responsive, responsible bidder, Sargent Irrigation Company, in the amount of $72,813; and

2. If approved, authorize the Chairman to execute the contract documents upon their receipt; and

3. If approved, authorize the Chief Sanitary Engineer to issue the Notice To Proceed.

BACKGROUND

A continued increase in the number of customers served by the Hidden Valley water system has generated a need for additional water capacity to meet demands. This well will provide the additional needed capacity.

The bids were opened on September 3, 1992. The bid summary is as follows:

BID SUMMARY	
CONTRACTOR	**BID AMOUNT**
Sargent Irrigation	$ 72,813.00
Welsco	$ 80,737.50
Humboldt Drilling	$ 85,710.00
Beylik Drilling	$ 97,143.00
Lang Exploratory Drilling	$104,772.50
Hydrologist Estimate	$ 68,190.00

FISCAL IMPACT

The funds to pay for this project are available in the Utility Enterprise Fund.

JOHN M. COLLINS, P.E.

JMC:DD:llr
cc: Robert Jasper, Asst. County Manager
Don Bissett, Comptroller
Jerry McKnight, Finance Division

BID PROPOSAL

Item No.	Approx. Quantity	Description of Item With Unit Price Written In Words	Unit Price	Total
		SECTION 1 **MOBILIZATION AND DEMOBILIZATION**		
1.	1 Each	Mobilization & Demobilization including all materials, labor, and equipment for completion of one monitoring well and one production well as described in Specifications for the lump sum price of Six Thousand and no/100 Dollars.	$6,000.00	$ 6,000.00
2.	40 Hours	Standby hours specifically at the request of the Owner at the rate of Two hundred and no /100 Dollars per hour.	$ 150.00	$ ~~6,000.00~~ 8,000.00 Drago ✓
		SECTION 2 **MONITORING WELL CONSTRUCTION**		
1.	250 L/FT	Drill minimum 6-3/4-inch diameter borehole to a depth of approximately 250 ft. at Fourteen and no/100 Dollars per lineal ft.	$ 14.00	$ 3,500.00
2.	1 Each	Geophysical log of pilot bore estimated at L.S. price of One Thousand One Hundred Twenty-five and no/100 Dollars each.	$1,125.00	$ 1,125.00

Item No.	Approx. Quantity	Description of Item With Unit Price Written In Words	Unit Price	Total
		SECTION 2 CONTINUED		
3.	50 Feet	Furnish & install 2-inch diameter galvanized slotted steel pipe, estimated 50 feet at Seven and 80/100 Dollars per lineal foot.	$ 7.80	$ 390.00
4.	200 Feet	Furnish & install 2-inch diameter galvanized steel pipe, estimated 200 feet at Two and 95/100 Dollars per lineal foot.	$ 2.95	$ 590.00
5.	1.0 yd^3	Furnish & install gravel pack estimated 1.0 yd^3 at Three Hundred Fifty and no/100 Dollars per yd^3.	$ 350.00	$ 350.00
6.	200 Feet	Furnish & install grout sanitary seal estimated at 200 feet at Nine and 30/100 Dollars per lineal foot.	$ 9.30	$ 1,860.00
7.	12 Hours	Furnish, install & operate necessary equipment for air-development of 2-inch diameter monitoring well estimated at Two Hundred Thirty and no/100 Dollars per hour.	$ 230.00	$ 2,760.00

Item No.	Approx. Quantity	Description of Item With Unit Price Written In Words	Unit Price	Total
		SECTION 3 **PRODUCTION WELL CONSTRUCTION**		
1.	200 Feet	Drill 6 3/4-inch minimum diameter pilot borehole approximately 200 feet at Fourteen and no/100 Dollars per lineal foot.	$ 14.00	$ 2,800.00
2.	200 Feet	Ream 16-inch minimum diameter production casing borehole, approximately 200 feet at Thirty-five and no/100 Dollars per lineal foot.	$ 35.00	$ 7,000.00
3.	100 Feet	Furnish & install 12-inch diameter blank production casing, approximately 100 feet at Twenty-five and no/100 Dollars per lineal foot.	$ 25.00	$ 2,500.00
4.	100 Feet	Furnish & install 12-inch diameter wire wrap well screen, approximately 100 feet at Forty-two and 38/100 Dollars per lineal foot.	$ 42.38	$ 4,238.00
5.	6 Yards^3	Furnish & install design gravel pack, estimated 6 yds^3 at One Hundred Seventy-five and no/100 Dollars per yd^3.	$ 175.00	$ 1,050.00
6.	50 Feet	Furnish & install sanitary grout seal, approximately 50 feet at Fourteen and no/100 Dollars per linear foot.	$ 14.00	$ 700.00

Item No.	Approx. Quantity	Description of Item With Unit Price Written In Words	Unit Price	Total
		SECTION 3 CONTINUED		
7.	80 Hours	Development by jetting, estimated at 80 hours at Two Hundred and no/100 Dollars per hour.	$ 200.00	$16,000.00
8.	40 Hours	Furnish, install & operate and remove necessary equipment, including discharge piping for development pumping, estimated 40 hours at One Hundred Fifteen and no/100 Dollars per hour.	$ 115.00	$ 4,600.00
9.	80 Hours	Furnish, install, operate and remove necessary equipment for test pumping, estimated at One Hundred Five and no/100 Dollars per hour.	$ 105.00	$ 8,400.00
10.	1 Each	Well disinfection and capping, at the lump sum price of Nine Hundred Fifty and no/100 Dollars	$ 950.00	$ 950.00

TOTAL BID (Written in Words)

Seventy Thousand Eight Hundred Thirteen and no/100 Dollars

TOTAL

$ ~~70,813.00~~ 72813.00 Drago

ITEM NO.	DESCRIPTION	UNITS	UNIT PRICE	CONTRACT AMOUNT	COMPLETED TO DATE UNITS	COMPLETED TO DATE AMOUNT	PREVIOUSLY BILLED UNITS	PREVIOUSLY BILLED AMOUNT.	COMPLETED THIS PERIOD UNITS	COMPLETED THIS PERIOD AMOUNT	PERCENTAGES JOB COMPLETE	PERCENTAGES CONTRACT AMOUNT
	SECTION ONE											
1	MOBILIZATION	1 LS	$6,000.00	$6,000.00	1	$6,000.00	0	$0.00	1	$6,000.00	100.00%	100.00%
2	STANDBY TIME	40 HR	$200.00	$8,000.00	10	$2,000.00	0	$0.00	10	$2,000.00	25.00%	25.00%
	SECTION TWO, MONITORING WELL											
1	6-3/4" BOREHOLE	250 LF	$14.00	$3,500.00	254	$3,556.00	0	$0.00	254	$3,556.00	101.60%	101.60%
2	GEOPHYSICAL LOGS	1 EA	$1,125.00	$1,125.00	1	$1,125.00	0	$0.00	1	$1,125.00	100.00%	100.00%
3	2" SLOTTED PIPE	50 LF	$7.80	$390.00	40	$312.00	0	$0.00	40	$312.00	80.00%	80.00%
4	2" BLANK PIPE	200 LF	$2.95	$590.00	186	$548.70	0	$0.00	186	$548.70	93.00%	93.00%
5	GRAVEL PACK	1 CY	$350.00	$350.00	1.5	$525.00	0	$0.00	1.5	$525.00	150.00%	150.00%
6	GROUT SEAL	200 LF	$9.30	$1,860.00	180	$1,674.00	0	$0.00	180	$1,674.00	90.00%	90.00%
7	AIR DEVELOPMENT	12 HR	$230.00	$2,760.00	12	$2,760.00	0	$0.00	12	$2,760.00	100.00%	100.00%
	SECTION THREE, PRODUCTION WELL											
1	6-3/4" BOREHOLE	200 LF	$14.00	$2,800.00	0	$0.00	0	$0.00	0	$0.00	0.00%	0.00%
2	REAM 16" BOREHOLE	200 LF	$35.00	$7,000.00	138	$4,830.00	0	$0.00	138	$4,830.00	69.00%	69.00%
3	12" CASING PIPE	100 LF	$25.00	$2,500.00	70	$1,750.00	0	$0.00	70	$1,750.00	70.00%	70.00%
4	12" WELL SCREEN	100 LF	$42.38	$4,238.00	70	$2,966.60	0	$0.00	70	$2,966.60	70.00%	70.00%
5	GRAVEL PACK	6 CY	$175.00	$1,050.00	3	$525.00	0	$0.00	3	$525.00	50.00%	50.00%
6	GROUT SEAL	50 LF	$14.00	$700.00	50	$700.00	0	$0.00	50	$700.00	100.00%	100.00%
7	AIR DEVELOPMENT	80 HR	$200.00	$16,000.00	27	$5,400.00	0	$0.00	27	$5,400.00	33.75%	33.75%
8	DEVELOPMENT PUMPING	40 HR	$115.00	$4,600.00	14	$1,610.00	0	$0.00	14	$1,610.00	35.00%	35.00%
9	TEST PUMPING	80 HR	$105.00	$8,400.00	77	$8,085.00	0	$0.00	77	$8,085.00	96.25%	96.25%
10	DISINFECT & CAP	1 LS	$950.00	$950.00	1	$950.00	0	$0.00	1	$950.00	100.00%	100.00%
	TOTAL CONTRACT			$72,813.00		$45,317.30		$0.00		$45,317.30	62.24%	62.24%
	CHANGE ORDERS											
CO 1	9" BOREHOLE	254 LF	$1.25	$317.50	254	$317.50	0	$0.00	254	$317.50		
	4" SLOTTED PIPE	40 LF	$0.20	$8.00	40	$8.00	0	$0.00	40	$8.00		
	4" BLANK PIPE	186 LF	$3.05	$567.30	186	$567.30	0	$0.00	186	$567.30		
	GRAVEL FEED TUBE	55 LF	$2.25	$123.75	55	$123.75	0	$0.00	55	$123.75		
	TOTAL CHANGE ORDERS			$1,016.55		$1,016.55		$0.00		$1,016.55		
	TOTAL CONTRACT AND CHANGE ORDERS			$73,829.55		$46,333.85		$0.00		$46,333.85		

Final cost

APPENDIX 6-Miscellaneous Information

a. Sieve analyses
b. Correspondence with State Engineer
c. Water level data sheets

DRILLER SARGENT IRRIGATION
BROKEN BOW NE, 68822

ENGINEER

ANALYSIS BY BILL SCHAFER
DATE November 4, 1992

JOB NAME 32788728S3

LOCATION

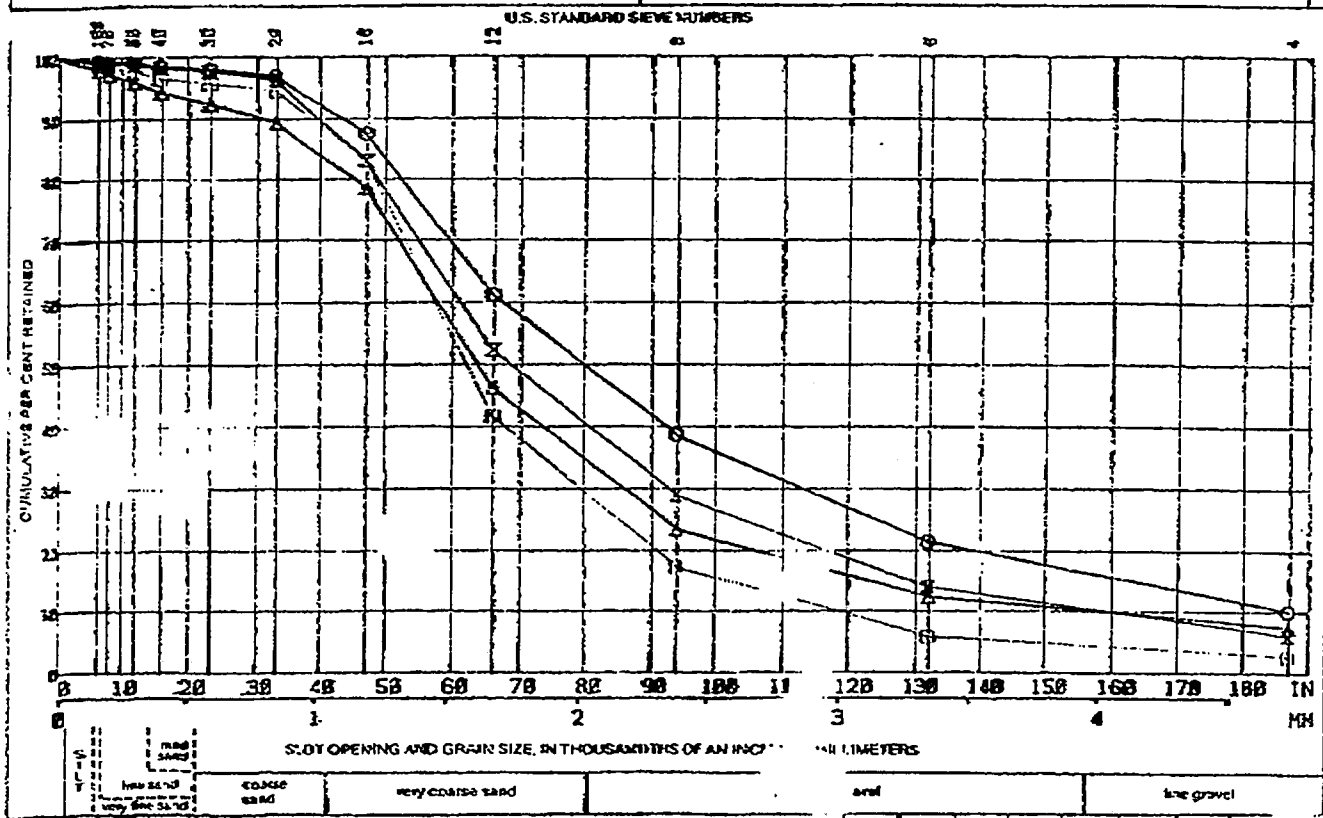
JOHNSON I.D. NUMBER 92388
SAMPLE SENT IN BY SARGENT IRRIGATION

SAND ANALYSIS REPORT

Johnson Division
P.O. Box 64118 St. Paul, Minn. 55164
Tel. 612-636-3900
800-328-9110
Telex 297451

PAGE 1 OF 1

NOV 04 '92 09:40 JOHNSON CUST SERVICE P.1/1



TEST HOLE DATA	
DIAMETER	
DEPTH	
DRILLING METHOD	
DRILLING FLUID	
GEOPHYSICAL LOGS	
STATIC WATER LEVEL	

WELL DATA	
CASING DIAMETER	
DESIRED YIELD	
WELL APPLICATION	

DESIGN RECOMMENDATIONS

RECOMMEND:
JOHNSON VEE WIRE SCREEN
12PS 100 SLOT (0.100 IN.
WITH 4-8 GRAVEL OR
3/4 X 1/8 IN. SUB TO
WELL ROUNDED GRAVEL.

COMMENTS

SAMPLES FROM PURITY No. 5 Drill Site (ARCH Madison Valley No. 5)

.100 in slot size
Actually installed 0.090 slot

COMBINED SAMPLE DEPTHS	PHYSICAL SAMPLE DESCRIPTION	sieve inches U.S. Sieve #	4.76 4	3.36 6	2.38 8	1.68 12	1.19 16	.840 20	.590 30	.420 40	.297 50	.210 70	.149 100	.074 200	.053 270	TOTAL WT.
105-117	O SILT TO FINE GRAVEL		98.4	.5	36.8	81.4	87.6	97.8	98.8	98.6	99.2	99.4	99.6			582.9
125-132	□ SILT TO VERY COARSE SAND		2.7	6.9	17.4	41.6	80.2	94.6	95.7	96.7	97.8	98.4	98.9			184.8
135-148	Δ SILT TO VERY COARSE SAND		7.4	12.4	23.5	46.3	78.5	89.3	92.3	96.3	95.8	97.3	98.8			298.8
168-178	X SILT TO VERY COARSE SAND		6.1	14.8	29.8	52.4	83.8	96.3	97.5	98.3	98.7	98.9	99.3			456.8

SCREEN RECOMMENDATIONS

DIAMETER	SLOT	LENGTH	SETTING

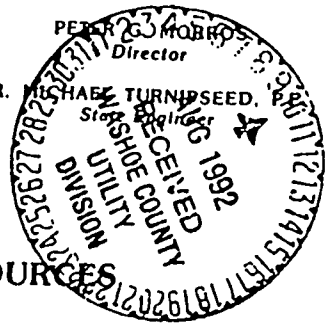
SO MANY CONSIDERATIONS ENTER INTO THE MAKING OF A GOOD WELL THAT WHILE WE BELIEVE SLOT SIZES RECOMMENDED OR FURNISHED ARE

BOB MILLER
Governor

STATE OF NEVADA

PETER G. MORROS
Director

R. MICHAEL TURNIPSEED, P.E.
State Engineer



DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WATER RESOURCES
Capitol Complex
123 W. Nye Lane
Carson City, Nevada 89710
(702) 687-4380

Waiver - M/O-575

August 6, 1992

Jack Ferris
Water Rights Technician
Washoe County Utility Division
P.O. Box 11130
Reno, NV 89520

Re: One (1) monitor well for long term water level and water quality associated with Purity Well Field, Washoe County, Nevada; Local No. = 087 N19 E20 16 cb

Dear Mr. Ferris:

As provided in Section 534.450 of the Regulation for Water Well and Related Drilling, as adopted under Chapter 534 of the Nevada Administrative Code, and for good cause shown, authorization is herewith granted to complete the subject wells as described in your letter dated July 22, 1992. This office waives none of the regulation. The annulus of each well must be cemented with cement slurry with no more than 3% bentonite by weight from the approximate depth of the two foot bentonite plug to land surface. Full compliance with the remainder of the statute and regulation is required. The subject wells must be properly plugged and abandoned as required under NAC 534.420 upon project completion. Please include as accurate a description as possible of the location of each well on the completion reports. It is expressly understood this authorization does not relieve the operator of the permitting requirements of other state, federal and local agencies.

If any questions arise please contact this office at 702-687-4380.

Sincerely,

Thomas K. Gallagher, P.E.
Hydraulic Engineer III

TKG/jjs
cc: NDEP

JB MILLER
Governor

STATE OF NEVADA

PETER G. MORROS
Director

R. MICHAEL TURNIPSEED, P.E.
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WATER RESOURCES
Capitol Complex
123 W. Nye Lane
Carson City, Nevada 89710
(702) 687-4380

AUG 1992
RECEIVED
WASHOE COUNTY
UTILITY
DIVISION

57874
W-371

August 6, 1992

Jack Ferris
Water Rights Technician
Washoe County Utility Division
P.O. Box 11130
Reno, NV 89520

Dear Mr. Ferris:

Under the provisions of NRS 534.050(2), authorization is hereby granted this date to drill one (1) exploration well located within the 40-acre subdivision as described under Application 57874 or within the NW¼ SW¼ Section 16, T.19N., R.20E., M.D.B.&M.

The intent to drill card and log, when filed, shall bear Waiver No. W-371, name, and license number of the driller performing the work. The starting and completion dates of the exploratory well will not exceed ninety (90) days from the date of this waiver. Information concerning water quantity must be collected within thirty (30) days of the completion of the well. If the data indicates that the well cannot be used, the well must be plugged within the thirty (30) day period by a well driller licensed in Nevada. If an exploratory well is pumped or flowed, it should be tested not more than 72 hours total unless otherwise waived. When artesian flow is encountered in an exploratory well, the well must be controlled as required under NRS 534.060(3).

Upon the determination that an exploratory well will be used for a production well, the well must be properly valved and shut in. The well cannot be used except for aquifer testing purposes, until a permit has been granted by the Division of Water Resources. If the application to appropriate is cancelled, withdrawn or denied, the well must be plugged in accordance with the Regulations for Drilling Water Wells and the authorization granted under this waiver will be simultaneously rescinded. This authorization expires November 6, 1992.

The granting of this waiver does not grant or infer any rights of appropriation of the public waters and shall not be deemed to result in the development of any equity.

WELL CONSTRUCTION PERMIT AND PROPOSED PLOT PLAN

DATE 7/31/92

PERMIT NO. 4512

Owner's Phone # (702) 785-4743

Items to be shown within 150' of proposed well:

1. Property Lines & Dimensions
2. Sewage Disposal System (If in place)
3. Water Bodies (lakes, streams, etc.)
4. Drainage Pattern
5. Existing Wells
6. Indicate setback from property line
7. Structures (If in place)
8. Roads or Highways (by name)

Owner of Proposed Well WASHOE COUNTY

Address 1195 'B' CORPORATE BLVD.

Address at Site SAME AS ABOVE

Parcel Number 12-401-13

NW 1/4 SW 1/4 Sec 16 T 19 R 20

New Well ✓ Modification

Well Drilling Company TO BE BID

Approximate Depth

Use of Well MUNICIPAL

PLOT PLAN

SEE ATTACHED PLOT PLAN

COPY TO BE ON WELL SITE

HIDDEN VALLEY MONITORING WELL #1
WATER LEVEL DATA

DATE	TIME	READING	-2.~~35~~ 61 FT. FOR CONVERSION TO PUMP TEST M.P.	OBSERVER
12/10/92	0900	19.48	16.87	DD
12/11/92	1600	19.98	17.37	DD
12/14/92	0900	19.44	16.83	EE
12/14/92	1230	19.15	16.54	EE
12/14/92	1600	18.90	16.29	EE
12/15/92	0830	18.05	15.44	EE
12/15/92	1600	18.33	15.72	EE
12/16/92	0900	18.68	16.07	EE
12/16/92	1600	18.26	15.65	RVH
12/17/92	0730	17.54	14.93	RVH
12/18/92	1030	17.44	14.83	EE
12/21/92	0900	20.33	17.72	RVH
12/21/92	1515	20.45	17.84	DD
12/22/92	0815	20.75	18.14	RV
12/23/92	0815	21.16	18.55	RV
12/23/92	1600	21.26	18.65	DD
12/24/92	0755	21.40	18.79	RVH - New Ref. Point. Previous
12/28/92	0800	20.94	18.33 RV	readings adjusted (New data sheet)
12/29/92	0900	20.65	18.04	DD
12/30/92	0900	20.63	18.02	DD
12/31/92	0815	20.59	17.98	RV
1/4/93	0810	20.40	18.09	RV
1/7/93	~~07~~ 1000	21.15	18.84	DD (Steel Tape)
1/8/93	1100	20.20	17.89	DD "
1/11/93	1500	17.30	14.99	E.E. "
1/13/93	11:30	18.96	16.65	DD ACTAT
1/19/93	1500	20.66	18.35	DD
1/25/93	1500	21.50	19.19	DD

HIDDEN VALLEY MONITORING WELL #1
WATER LEVEL DATA

DATE	TIME	READING	-2.~~35~~ 61 FT. FOR CONVERSION TO PUMP TEST M.P.	OBSERVER
26 Jan 93	12:45	21.95	19.64	DD Rig 2 Westfac well
27 Jan 93	1500	23.37	21.06	DD
28 Jan 93	1400	20.60	18.49	
10 Feb 93	1300	19.44	17.13	DD
18 Feb 93	1600	18.87	16.56	RV
24 Feb 93	1500	19.49	17.18	RV
25 mar 93	1000	14.67	12.36	DD
31 mar 93	0900	13.92	11.31	DD

WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION
John M. Collins, Chief Sanitary Engineer

POST OFFICE BOX 11130
RENO, NEVADA 89520
PHONE: (702) 785-4743

DATE _____

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PROJECT Hidden Valley Production well No. 5

Date	W.L.	By		
24 Dec 92	14.15	D.D.		
28 Dec 92	14.06	RV		
29 Dec	14.00	DD	0900	
30 Dec 92	14.06	DD	0900	
31 Dec 92	14.08	RV	0815	
4 Jan 93	14.04	RV	0810	
7 Jan 93	14.01	DD	100	steel Tape
11 JAN 93	13.67	E E.	1500	" "
13 Jan 93	13.71	DO	11:30	Actual
19 Jan 93	13.72	DO	1300	
25 Jan 93	13.32	DD	1500	
26 Jan 93	13.57	"	1295	
27 Jan 93	13.44	"	1500	
28 Jan 93	13.37	"	1400	
10 Feb 93	13.56	"	1300	
18 Feb 93	13.67	RV	1600	
24 Feb 93	13.54	RV	1500	
25 Mar 93	12.56	DD	1000	
31 Mar 93	12.32	DD	0900	