

Mt. Rose Well No. 6
Well Construction and Testing
Final Report
December 2000



WASHOE COUNTY

DEPARTMENT OF WATER RESOURCES

UTILITY SERVICES DIVISION

RENO, NEVADA 89502

4930 ENERGY WAY

Department of

Water Resources

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SUMMARY AND CONCLUSIONS

- 1. The developers of the Montreux subdivision and golf course were required by Washoe County to provide adequate water rights, supply, and infrastructure for their development. As the Owner, Montreux contracted with Lang Exploratory Drilling from Elko, Nevada to drill, construct and test a well to meet the water supply portion of those needs. At an appropriate time, Montreaux will dedicate this well and appurtenant infrastructure to Washoe County for incorporation into the Mt. Rose water system.
- 2. While the drilling contract was between Montreaux and Lang Exploratory Drilling, Montreaux directed Lang to construct the well to meet Washoe County municipal well standards. As a result, Hydrology staff from the Washoe County Department of Water Resources provided design and inspection services during construction and testing of the well.
- 3. Drilling began January 19, 2000. Construction of the well, including air-lift development was completed on February 4, 2000. The well has 14-inch diameter casing installed to a depth of 755 feet. Screens start at 540 feet and extend to the bottom of the hole.
- 4. Pumping development and test pumping began on February 14, 2000. Test pumping included a 4-step, step drawdown test and a 10-day continuous discharge test. The 10-day constant discharge test ended on February 29, 2000.
- 5. **RECOMMENDED YIELD-**Based on the assumption that the well will not be pumped in conjunction with Mt. Rose No. 5 continuously for more than 30 days, the well could be equipped to pump 550 gallons per minute. The Maximum anticipated pumping level at 550 gallons per minute after 30 days of continuous pumping would be about 500 feet below ground surface. The well could be equipped to pump as much as 650 gallons per minute if not pumped continuously for periods longer than 10 days. **Our recommendation is a variable speed pump or a flow control device such that the pumping rate could be coordinated with a maximum pumping level of 500 feet below the ground surface.**
- 6. **RECOMMENDED PUMP SETTING-**The pump intake should be set to a minimum depth of 560 feet below ground surface. The setting would allow for long-term water level declines.

- 7. There will be some impacts on nearby domestic wells from pumping the two Mt. Rose production wells. These wells will have to be monitored at least quarterly and assessed for the amount of impact caused by the production wells. The County may provide financial assistance to the domestic well owner if the impact is determined to seriously affect the performance of the domestic well. Reimbursement will follow guidelines as currently written by Washoe County.
- 8. Sand content measured during the pumping tests showed the well meets County standards for sand production (less than 5 parts per million by volume).
- 9. Water quality analyses showed water from the well meet all current water quality standards. In general, the water quality is excellent, with total dissolved solids below 200 parts per million.
- 10. The well met standards for plumbness and alignment:

INTRODUCTION

Location and Purpose

Figure 1 shows the location of the Montreux Subdivision and the production well. The well is located on the southeast corner of the intersection of Lake Geneva Dr. and Bordeaux Rd on Assessors Parcel No. 148-150-01. The Parcel is in the NW ¼ of the SE ¼ of section 3, T17N, R19E. A global Positioning System Survey placed the well at an altitude of 5749.7 feet above Mean Sea Level.

The purpose of the well is to provide additional supply into the Mt. Rose water system owned and operated by Washoe County. The additional source is to serve growth in the area, predominantly the Montreaux Development. Once the well is equipped, the well and land will be dedicated to Washoe County. Washoe County will then own and operate the well.

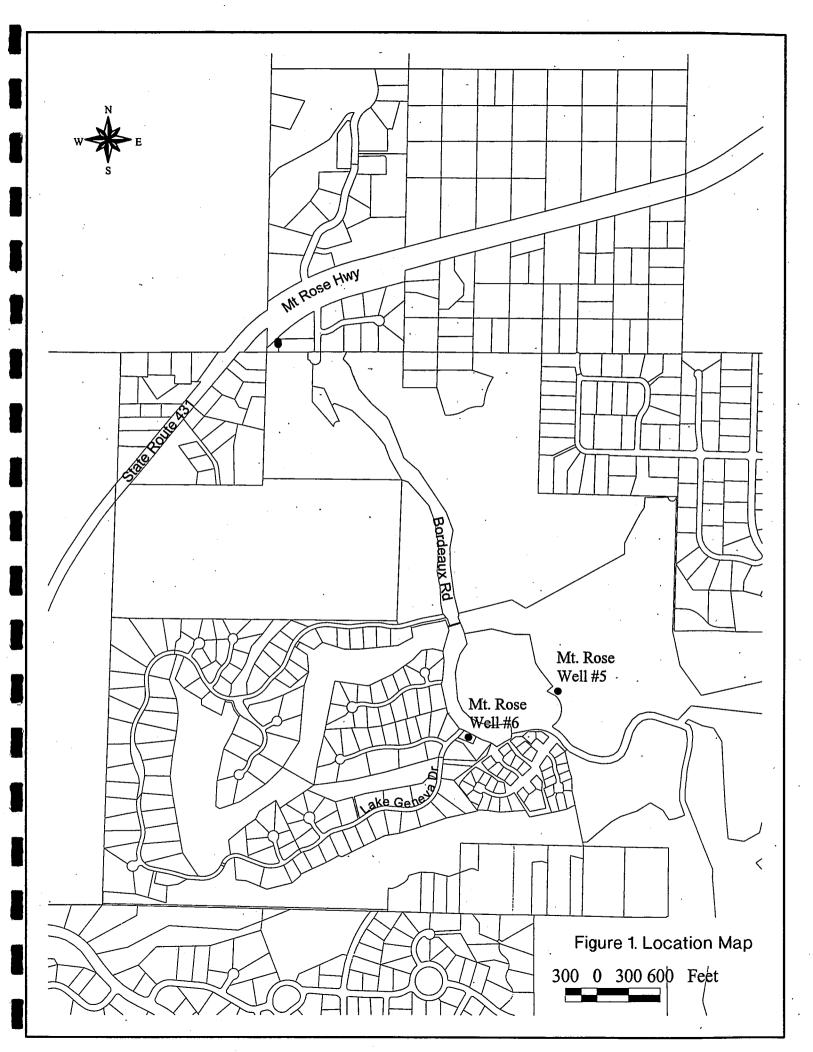
Hydrogeologic Setting

The Montreux Subdivision is located near the apex of an alluvial fan emanating form the mouth of the Galena Creek Canyon to the west. The Carson Range contains the upper Galena Creek watershed and provides the majority of groundwater recharge to the Galena Creek alluvial fan. Galena Creek also provides a source of recharge to the groundwater system. The well is located about 1,200 feet to the north of Galena Creek. It is assumed that an apparent east-west trending fault scarp forms the northern Galena Creek boundary and may influence groundwater flow as well.

In 1991, a nearby test well was drilled and constructed to a depth of 611 feet (Washoe County, 1991) and later (1999) abandoned. The near surface lithology consists of mafic volcanic and granodiorite colluvium and glacial outwash material. Below this unconsolidated material are volcanic mudflow (lahar)deposits as well as undifferentiated andesitic or basalt-andesitic extrusive volcanic rock. Granodiorite of the Carson Range (Sierra Nevada Batholith) forms the basement rock.

County Participation During Construction

Because the well would eventually be dedicated to Washoe County, personnel from the County Department of Water Resources participated in the well design and construction supervision. Staff logged the borehole cuttings, evaluated the geophysical logs and provided design recommendations for well completion. Following well construction, County staff collected and evaluated all test pumping data, including data collected from nearby domestic wells. County staff coordinated with the domestic well owners to provide an evaluation of the impact the new production well is likely to have on their



domestic well. Coordination with domestic well owners included modifying 4 domestic wells with a "stilling well" to allow easy access to the wells for water level measurements. Washoe County will continue to monitor water levels in the domestic wells to verify the impact caused by the new municipal well.

DRILLING and COSTRUCTION OPERATIONS

Contractor

Lang Exploratory Drilling, a division of Boart Longyear contracted with Montreux Joint Venture, a Nevada General Partnership to construct and provide pumping test equipment for the well. Washoe County staff had originally intended to bid and manage the job but due to time constraints, Montreux Joint Venture wanted the well completed during the winter months and opted to directly contract with a driller. Lang Exploratory Drilling had done good quality work for the County in the past and happened to have equipment in the area finishing up a job for another client. The County recommended to Montreux that they contract with Lang with the understanding that Lang would construct the well to meet Washoe County municipal well standards. Lang accepted the contract and agreed to work closely with Washoe County during construction and testing.

Drilling and Construction .

Lang began moving equipment on site January 19, 2000. Set up took three days because heavy rains had made the site very muddy and hindered set up. Drilling using the dual tube flooded-reverse method started on January 22, 2000 and progressed as follows:

January 22, 2000	Drilled 40 feet of 29-inch diameter borehole for surface casing.
January 23 2000	Drilled 29-inch diameter borehole to 105 feet and installed 100 feet of 22-inch diameter surface casing.
January 24, 2000	Install 105 feet of cement grout for sanitary seal.
January 25 through January 30, 2000	Drill 655 feet of 19-inch diameter production casing borehole.
January 30, 2000	Conduct geophysical log of borehole.
January 31, 2000	Install 554 feet of blank 14-inch diameter well casing and 200 feet of 14-inch diameter wire wrap well screen.
	Install 10 cubic yards of design gravel pack.

February 1, 2000 Air-lift develop well for 9.5 hours

February 2 2000 Air-lift develop well for 24 hours.

February 3, 2000 Air lift develop well for 17 hours and "top off" gravel pack

with 1.13 cubic yards of gravel.

Treat well with chemicals to enhance development (Baroid

NuWell 220®).

February 4, 2000 Demobilization from site.

Figure 2 shows a construction detail diagram for the completed well.

GEOLOGY/HYDROLOGY

Geology

The well is located near Galena Creek in the upper portion of an alluvial basin known and the Mount Rose Fan. Sedimentary units drilled through to a depth of about 360 feet consisted primarily of extrusive volcanic sands, gravels and cobbles, with occasional granitic outwash material. Volcanic mudflows (lahars) consisting of mixed andesitic, rhyolitic and dacitic fragments were encountered at a depth of 360 feet and extended to a depth of about 660 feet. Drilling encountered highly scoriated red cinder deposits from 660 feet to about 710 feet. Darker, occasionally fractured basalts were encountered from 710 feet to the bottom of the borehole at 760 feet. **Figure 2** also shows a lithologic summary of the geologist log. The detailed geologist log is included as Appendix A.

Hydrology

The source of the water for the well is probably recharge that occurs from precipitation falling on the Carson Range to the west. Water infiltrates through the alluvium and fractured volcanics and flows eastward through the Mount Rose alluvial fan. Based on the geologist log and drillers log, it appears the major producing zone is a lense of red volcanic cinders from about 650 feet depth to 750 feet depth. The cinders were encountered in Mount Rose Well No. 5 which is located about 960 feet away from the new Mount Rose No. 6 well. Interference effects noted during test pumping indicate the cinder aquifers are hydraulically connected.

WELL CONSTRUCTION

Lang Exploratory Drilling moved on site January 19, 2000. A series of recent storms had left the site a quagmire. For stability of the borehole, lang drilled a 38-inch diameter

borehole to 7 feet and cemented in a 7-foot length of 32-inch diameter surface casing. **Table 1** is a summary of the construction details for the well.

Depth	Table 1Well Construction Details
0-7 ft	38-inch diameter borehole with 32-inch diameter surface
	casing with cemented annular space
0-100ft	29-inch diameter borehole (from 7 feet to 100 feet) with
	22-inch diameter surface casing cemented in place.
0-750 ft	19-inch diameter borehole (from 100 feet to 750 feet)
	with14-inch diameter blank casing (from 0 to 540feet)
	and wire wrap well screen (between 540 and 740).

WELL DEVELOPMENT

Immediately following well construction, the well was developed using air-lift through a double surge block. Development began at the top of the screens and moved gradually downward to the bottom of the well. Development was judged by Washoe County staff to be complete after about 50 hours of development time. Prior to the last air-lift development period the well was treated with a chemical product manufactured by Baroid called NuWell 220. NuWell 220 was added to the well and allowed to stand in the well overnight.

An additional 24-hours of pumping development occurred before conduction the aquifer stress tests (pumping tests). Sand testing during the pumping development showed the well produced less than 5 parts per million by volume of sand, within the specifications required by Washoe County.

WELL TESTING SUMMARY

A line-shaft turbine pump powered by a diesel engine was used for pump development and pumping tests. The testing program consisted of a step-drawdown test, where the well was pumped at 4 selected rates for a period of 100 minutes at each rate. The step test was followed by a 10-day constant discharge test at a rate selected by evaluating the data from the step-drawdown test.

Step Drawdown Testing

The results of the step drawdown testing showed the well to be highly inefficient, with less than 10 percent efficiency at any pumping rate. We believe the inefficiency is related to the fact that the well produces from fractures in volcanic rocks, where turbulent flow in the fractures makes the formation itself generate inefficiencies that appear as well losses. **Table 2** shows the pumping rates for the step-drawdown test and the calculated efficiency at that rate. Graphs from the step-drawdown testing are shown in **Figures 3 and 4**.

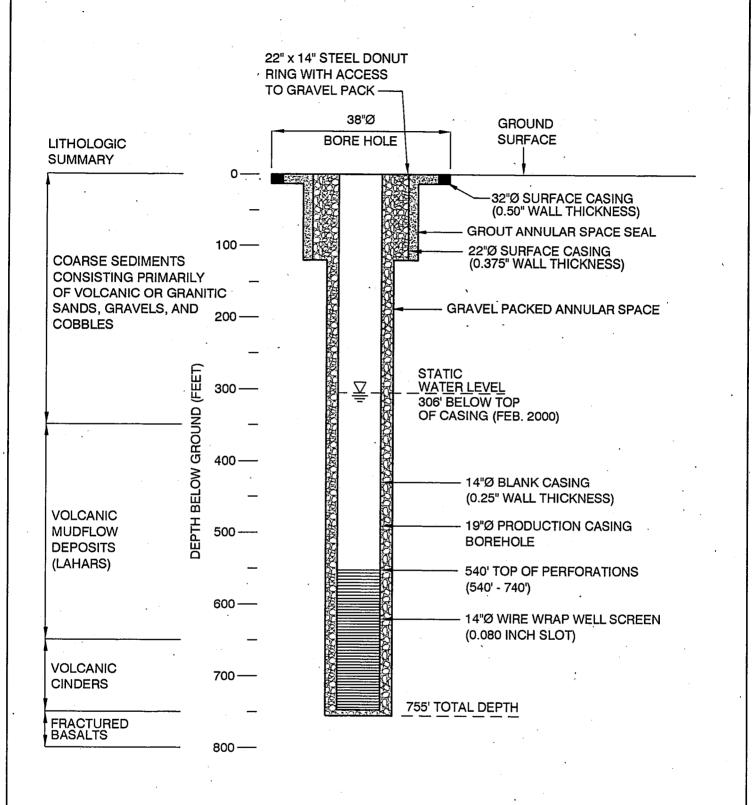
Table 2. Well Efficiency at various flow rates

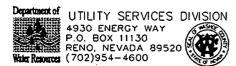
Pumping rate (gpm)	Efficiency (percent)
448	9
576	7
749	6 .
. 880	5

Constant Discharge Testing

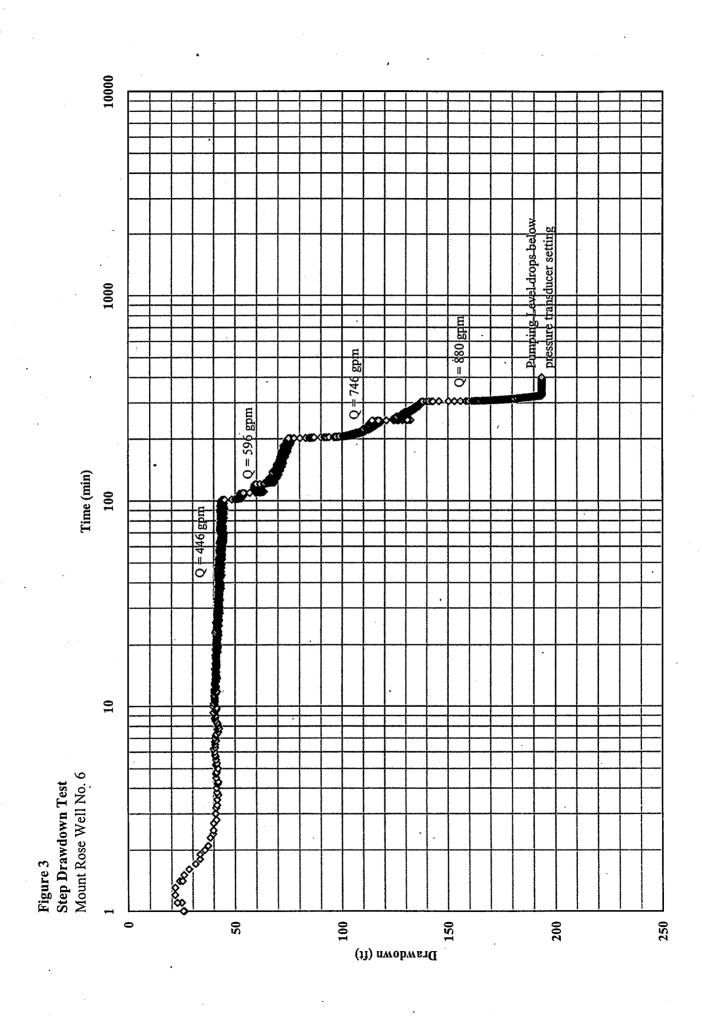
The purpose of the constant discharge testing is to determine aquifer hydraulic properties that, once determined, allow predictions regarding the long-term performance of the well. Several circumstances related to Mount Rose No. 6 added to the complexity of the test pumping and data analysis. Following are the circumstances that needed to be considered and evaluated from the test pumping data:

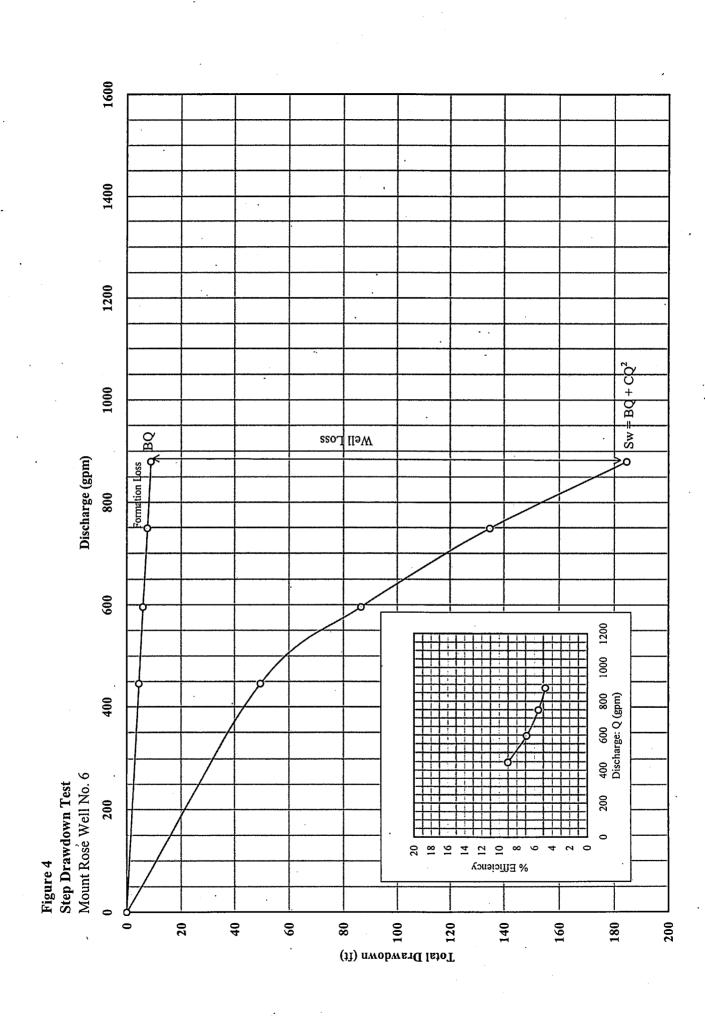
- 1. The well produces from fractured volcanic rock and pyroclastic cinder zones, requiring a minimum 10-day constant discharge test for proper aquifer analysis.
- 2. The well is located within 1000 feet of another municipal production well (Mount Rose No. 5) that produces from the same aquifer. Analysis required an evaluation of the likely interference effects associated with pumping both wells.
- 3. The well is located within 2,500 feet of several individual domestic wells. The County is required to notify domestic well owners within 2,500 feet of a proposed municipal supply well. The County has adopted an unofficial policy to monitor the effects of County owned municipal wells within the 2,500 ft. radius and evaluate the impact on the domestic well caused by municipal well pumping. If the County determines that the impact from pumping of the municipal well significantly impacts the domestic well, the homeowner may be eligible for reimbursement under guidelines established by the County. Four individual domestic wells near Mount Rose No. 6 were modified to allow easy monitoring and were monitored during the constant discharge testing.





MT. ROSE PRODUCTION WELL #6





The test data was analyzed by the computer program "Aquifer Win32" by Environmental Simulations, Inc and manual calculations using Jacob's equation for well interference. Aquifer Transmissivity in gallons per day per foot of aquifer width (gpd/ft.) were about 10,800 gpd/ft. Storage Coefficients based on drawdowns from nearby observation wells ranged from 0.0003 to 0.0008 (dimensionless term).

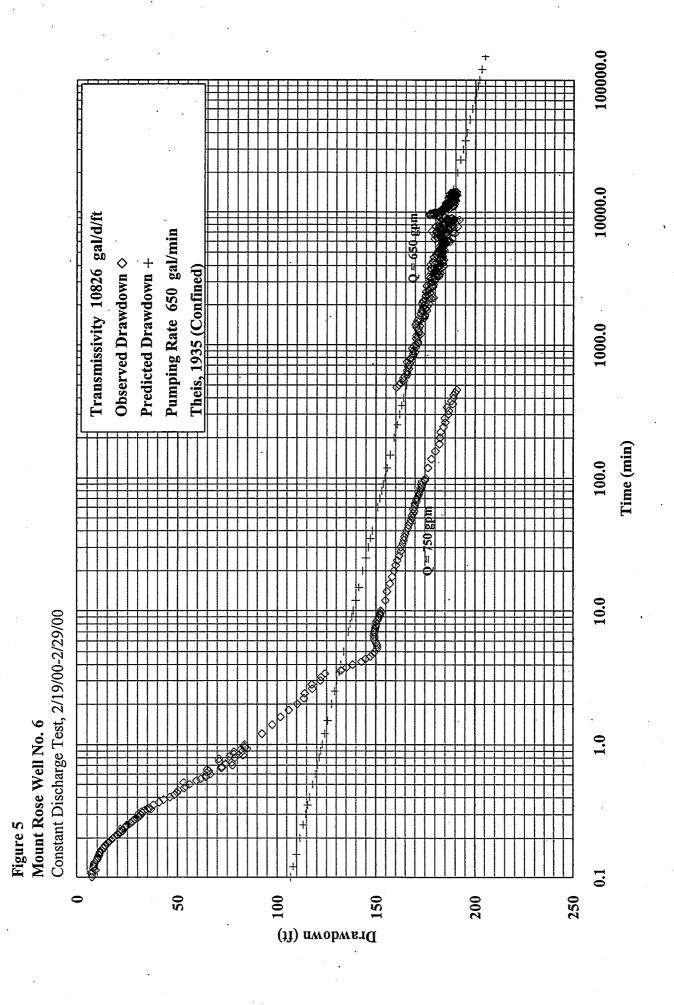
Data plots from the constant discharge testing are depicted in Figure 5 (Drawdown Mt. Rose No. 6) Figure 6 (Recovery Mt. Rose No. 6) Figure 7 (Drawdown Mt Rose No. 5) and Figure 8 (Recovery Mt. Rose No. 5). Pumping rate for the constant discharge test was reduced from 750 gpm to 650 gpm after about 500 minutes of pumping. The rate was reduced because it became apparent that the test would not hold the 750 gpm rate without exceeding the maximum desired drawdown for the test.

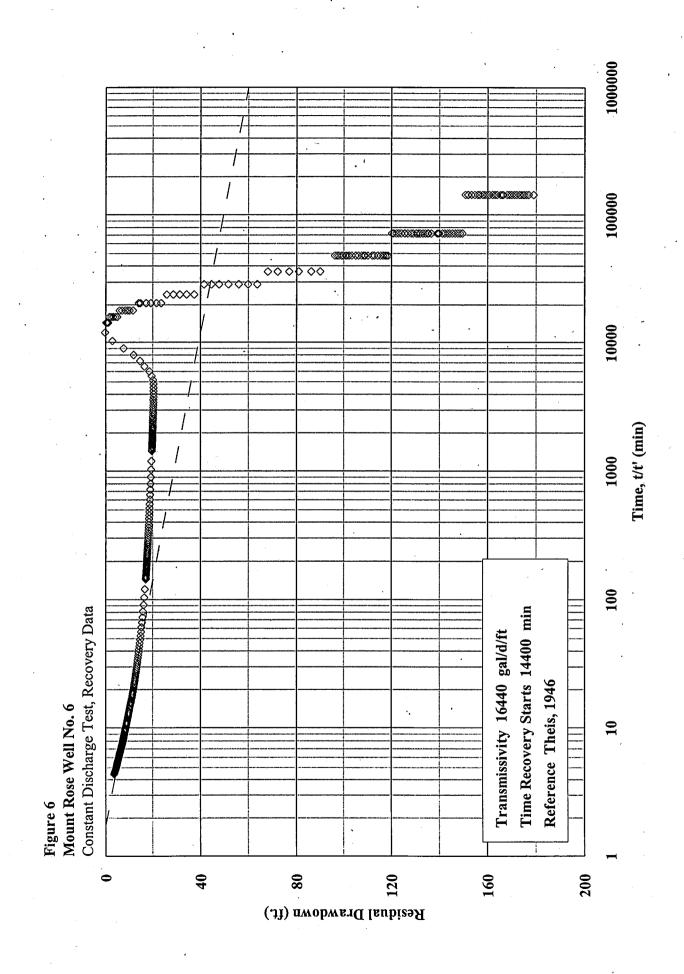
Figure 9 shows predicted drawdown in Mount Rose No. 6 at pumping rates ranging from 600 to 750 gpm. The figure also shows the top of the screened interval as related to drawdown. Continuous pumping periods of 10-days and 30-days are highlighted on the Figure. This figure does not take into account the well interference effects that would be caused if Mt. Rose No. 5 were pumped simultaneous with Well No. 6. Figure 10 shows the additional drawdown that would be expected in Mt. Rose No. 6 if Mt. Rose No. 5 were pumping at the same time at a rate of about 800gpm and Mt. Rose No. 6 were pumping at 650 gpm.

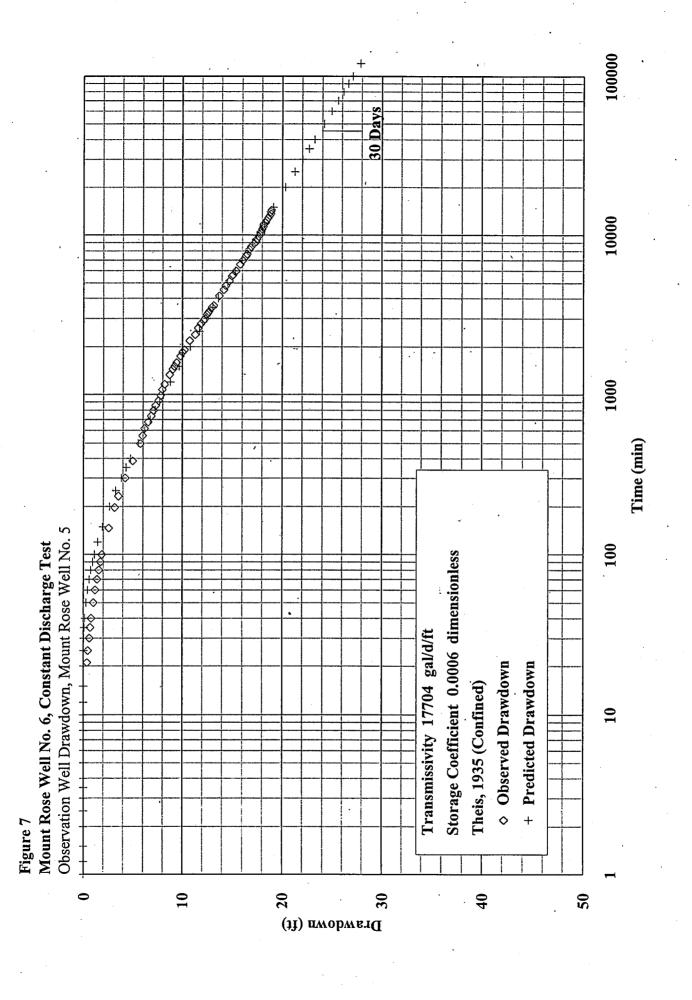
Water levels were monitored in four nearby domestic wells during the constant discharge testing. **Figure 11** shows the results of that monitoring and plots of the projected drawdown that would occur in each well if Mt rose were pumped at 650 gpm continuously for 30 days or longer. Water levels in these wells will be monitored at least quarterly as a concession to the homeowner and to satisfy the State Engineer regarding the long-term impact on these domestic wells. Data from the pumping tests and summary letter reports on each domestic well monitored are included in the Appendix.

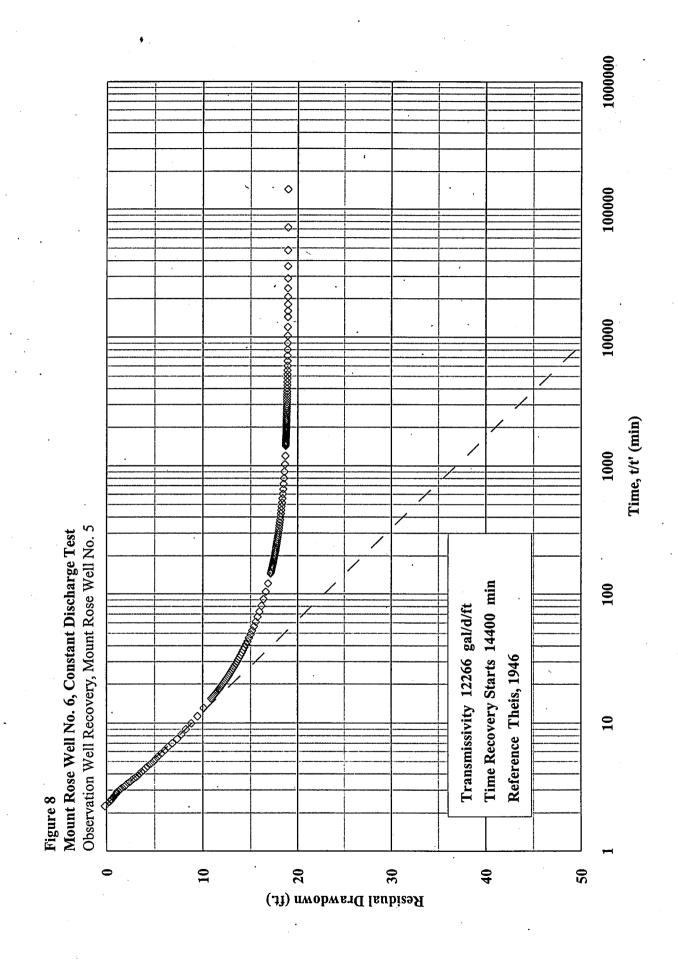
WATER QUALITY

Samples were collected according to sample collection protocol outlined in Standard Methods for the Analysis of Water and Wastewater then submitted to State and/or Federally certified analytical laboratories for water quality analysis. The samples were analyzed for primary and secondary inorganic constituents, volatile and synthetic organic compounds, and radiochemistry. Results show water from the well meets all current primary and secondary standards for municipal supply. All analysis results are included in the Appendix.









A-Series3 Q = 700 gpm → Series1 Q = 600 gpm ____ Series4 Q = 750 gpm Time (minutes) Top-of Screens Figure 9
Predicted Drawdown at Various Pumping Rates 0.1 40 † Drawdown (feet)

FIGURE- 10 30-Days continuous 10-Days continuous TOP OF SCREENED INTERVAL = 540 Ft. Pumping LINE - A Time, to minutes since Below ground surface, LINE -B below ground surface. March 2000 STATIC WATER LEVEL= 306 Ft. off. B-Predicted pumping level with both wells running. A-Predicted pumping level with Mount Rose No. 9 8 7 WELL INTERFERENCE EFFECTS Drawdown at Mount Rose No. 6 Mount Rose No. 5 @ 800 gallons per minute Mount Rose No. 6 @ 650 gallons per minute MOUNT ROSE WELL NO. 6-FEBRUARY / MARCH 2000 DRILLED AND TESTED LINE LINE

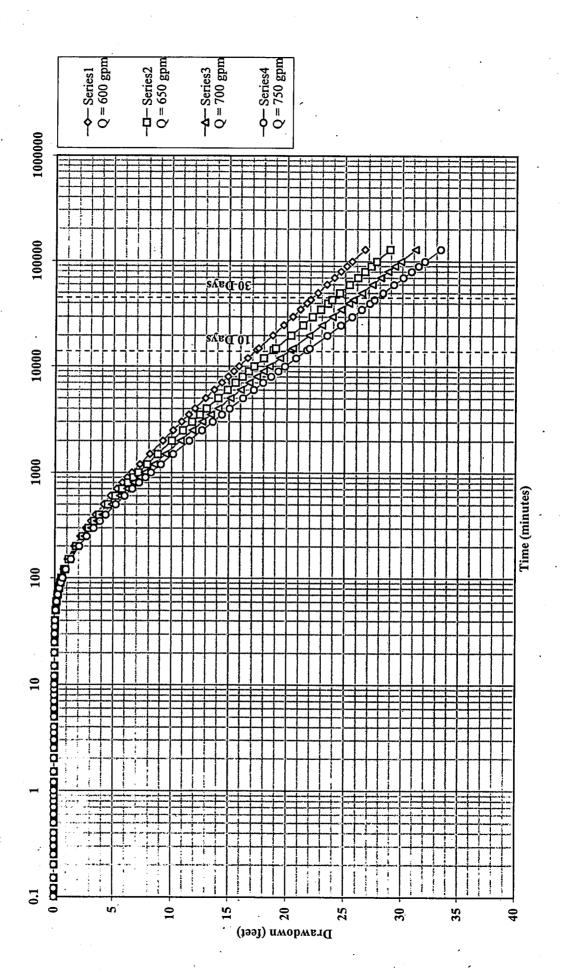
SEMI-LOGARITHMIC S CYCLES X 10 DIVISIONS PER INCH

VO. 340-LS10 DIETZGEN

Figure 11

Mount Rose Well 5

Simulated Interference Drawdown from MR6



APPENDIX A.

Drillers Log and Geologist Log

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

STATE OF NEVADA DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in

MONTREUX #4 Alt Rosc	#6
STATE OF NEVADA ON OF WATER RESOURCES DRILLER'S REPORT	OFFICE USE ONLY Log No Permit No Basin

PRINT OR TYPE ONLY DO NOT WRITE ON BACK

OO NOT WRITE ON BACK		accorda	nce with	NRS 534.	4.170 and NAC 534.340 NOTICE OF INTENT NO. 42862					
OWNER MONTREUX					ADDRESS AT WELL LOCATION CROSS STREET LAKE					
MAILING ADDRESS 16475	BORDI	IXUA	ORIVE.		ADDRESS AT WELL LOCATION CROSS STREET LAKE GENEVA AND BORDEAUX					
RENO, NV UV	F 1/. Ca.	. २	т '	1 7	©S R 19 E WASHOE County					
2. LOCATION	ا ا	148-	-150-0	01 ı	MONTREUX Subdivision Name					
PERMIT NO. 65364 Issued by Water Reso	urces	F								
3. WORK PERFORM	(ED		4.		PROPOSED USE 5. WELL TYPE					
	☐ Recondi			Oomestic						
☐ Deepen ☐ Abandon [Other		<u> LX N</u>	/lunicipal/	I/Industrial Monitor Stock Air Other					
6. LITHOL	OGIC LO	G			8. WELL CONSTRUCTION Depth Drilled 755 Feet Depth Cased 750 Feet					
Material	Water Strata	From	Ţo	Thick- ness	HOLE DIAMETER (BIT SIZE)					
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BROWN SAND & GREY	<u> </u>	20_			29 Inches 7 Feet 105 Feet 19 Inches 105 Feet 755 Feet					
ROCK			4.0	20_	19 Inches 105 Feet 755 Feet					
BROWN SAND, GREY &		40			CASING SCHEDULE					
WHITE ROCK			50	10	TI Size O.D. Heighti t. Hall thickness					
GREY ROCK		50	60	10						
GREY & BROWN ROCK		60	90	30	7 32 100.21 0.300					
GRANITIC SANDS &		90			750					
GRAVELS	ļ		100	10	4					
BLACK & GREY ROCK		100	350	250	Perforations: V_WTDF					
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MAROON & GREY ROCI		710	730	20_						
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	-		 	 	Placement Method: Pumped Concrete Grou					
					Gravel Packed: 🔯 Yes 🗆 No					
	-			<u> </u>	From 755 feet to SURFACE feet					
	 				9. WATER LEVEL 309 reet below land surface Artesian flow N/A G.P.M. P.S.I					
	1				Static water level: 3.09 feet below land surfac					
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Date startedJANUARY	22. 20	.0.0		, 19	This well was drilled under my supervision and the report is true to the best of my knowledge.					
Date completed FEBRUARY	3, 20	0.0		¥6	Name LANG EXPLORATORY DRILLING					
7. WELL	TEST DA	TA		-	Contractor					
· · · · · · · · · · · · · · · · · · ·		Pump	ဩ Air I	Lift	Address P.O. BOX 5279					
1 1	Draw Down et Below Stat	ic)	Time (Ho	ours)	ELKO, NV 89802					
260	21 ¹		1/	2	Nevada contractor's license number issued by the State Contractor's Board: 0021976					
- 20.0										
					Division of Water Resources, the on-site driller 2130					
		_			By dritter performing actual dritting our site of contractor					
		-+-			Date FEBRUARY 4, 2000					

	Drill				ration		LL #6	Lithology Stratigraphic	т
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480							Š			ľ
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650							338	MINOR SAND AND TAN CLAY, CLAY MUCHY WITH WET,	0.00	
660							22	SIGN FRACTURE CLAY WITH AUDESTIE, BASALT AND THE COASSE SAND PERRIES	-00-0-	<u>4</u>
670								RED SCONIATED BASAUT "CINDER"	74 74	
680	7							670-680 FLACTURED HILHLY VESICULATED	N 74 74	
690	İ							1" - 2"4 PIECES - SCORIA	-	
700	Į							REMAINSTELIS COARSE SAND TO PERBLE IN SIZE, VESICULATED	A	
710									24 24	
720	1				•			REO/BENNA LESS VESICULATED BASALT	24 24	
730	l							TRANSMON TO APRAMITIC GOTY		-
740	I					•		ANOCETE BETWEEN 720-730' AWARE CHIPS AND PIECES ~ 14" OR LESS	K K	
750	İ							· I	FFFFFF	KI II
760								FAACTUABAT 740-750	N NC	
770								TD 760'		·
780	ł									
790	ı							• .		
800	l							•		
810										
820								·	ľ	
830	l		•					·	ļ	
840							-	•	1	
850										
860						•			-	
870	1							*	İ	
880	1								-	
890	ļ						1	ļ		
900								<u> </u>	ľ	
910	1								· .	
920										

APPENDIX B

Test Pumping Data and Graphs



DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

WELL	MONTREUX # 2	
PUMPI	NO OBSERVATION WELL	
PUMPI	NG RECOVERY DATA	
PAGE	I OF 2	



1-4-pl 9:01 1-4-p2 10:41

P	U	MP	IN	IG	TES	ΤI	DAT/
---	---	----	----	----	------------	----	------

TYPE OF PUMPING TEST STEP TEST	
HOW Q MEASURED 6" × 5" OKIFICE	M.P. for WL's TOP PVC (1") STULL WELL-elev.
HOW WL'S MEASURED PRESSURE THANSDUCER	DEPTH OF PUMP/AIRLINE539' wrt
PUMPED WELL NO. MONTREVX # 2	% SUBMERGENCE: initialpumping
RADIUS of PUMPED WELL	PUMP ON: date _ 2/18/00 time _ 0900
DISTANCE from PUMPED WELL	PUMP OFF: date 2/18/00 time

0=9:00:57 TIME t = at t'=0					STATIC	WATER LI WATER LEVEL			TER DUCT	COMMENTS		
CLOCK TIME	EL/ mins hrs	APSED T	ME t'	t /ť	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	③or S'	Q/5	h	Q	(NOTE ANY CHANGES IN OBSERVERS)
701		0				STEPI				13"	448	LOTS OF Q1 0-10 mw
102		1						24.65				
103		2						37.32				
104		3						41.10				7
105		4						41.85				
106		5						41.01				
107		6						40.03				
108		7						40.97				
109		8						41.82				
110		9						40.39				
911	10	10		٠.				40.46	11.1			
913		12				· · · · · · · · · · · · · · · · · · ·	<u></u>	40.70				
915		14						40.81		<u> </u>		·
917		16				•		40.85		<u> </u>		
119	120	18						41.39		ļ		
121	12	20						41.03				
	25	25						41.72	•	1314"		
.51	30	30						42.73		ļ		QL.
	35	35						42.50				
	40 -	40						42.40	10.6	<u> </u>		
· ··y	45	45						42.65		13-131/4		<u>at</u> .
77.	50	50						43.03		<u> </u>	·	
001	-	60						43.10				
011		70			349.59			43.39		ļ		
021	20	80						44.05		ļ		
·	30 1	90	-					43.3.5	·			,
041		100						43.59		"		
051		110	,			STEP IL		62,80		20"	556	
101_	2	120				Q1		59.16		23"	596	
106		125					····	66.43	9.0	ļ		4
111	20_2	130			373.11			66.91		 		RYMPIAG LEVEL WITH SAVNOW
	3	140						67.90		 		379 METER 650-700gpm
141	40 2	160						71.49		 		
141 151	2	170						71.41	0.0	-		
201								72.25	8.3	-		
211	3	180						74.65		 	-	
221	20 3	190 200				STEP III		74.93		36"	741	
226		205				אנן וסופ		75.75	-	ماح	746	
<u>731</u>		210						98.66		1011	7.00	
251		230						105.61		361/2	750+	LORGINAL DISCUSSION
	10 4	250						113.95		1 2.	 	TRREGULAR FLOW INCAME
331		270					<u> </u>	125.61	-	36		ENLINE KYM
		290						136.30	6.6	21-	746	
40		300			443.6			137.38	5.5	36	176	FLOW STABLE



DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

WELL	Mou	ceeva	*2		
PUMPIN	ig)/ob	SERVA	TION W	/ELL	
PUMPIN	G)/ RE	COVER	Y DATA	\	
PAGE.	_2	OF	2	•	



TYPE OF PUMPING TESTSTEP TEST	
HOW Q MEASURED	M.P. for WL's Top PVC I" elev
HOW WL'S MEASURED PRESSURE TRANSDUCCK	DEDTILOF DUMPING SAG
PUMPED WELL NO. MONTREYX #2	O/ CURLICROSTICS : III
RADIUS of PUMPED WELL	PUMP ON: date 2/15/00 time 0900
DISTANCE from PUMPED WELL	PUMP OFF: date time
	une

	D	ISTANCE	from P	UMPED	WELL			PUMF	ON. uale OFF: da	te Z/	18/00	time time
F												
		TIME		_]	EVEL D		W	TER			
	t =		t'=0) 	STATIC	STATIC WATER LEVEL 306.20					DUCT	COMMENTS
CLOC TIME	mins	APSED T	t'	t /ť	P. L. READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'	a/ ₅	h	Q	(NOTE ANY CHANGES
1411	105	310						173.59		50"	1	IN OBSERVERS)
1421		320			494.3			188.14	-	1 20	000	
1431	30 5	330	ļ	<u> </u>	499.8			193.62				ADTISTING FLOW
1441	40 5	340		<u> </u>				193.62			-	REPORT NO PLOW
1451	+	350		<u> </u>				193.64		<u> </u>		
1501	+	360		<u> </u>		-		19365		50"		RPM 2133 - OPEN LINE
1511		370		ļ				193.64				OPENVALVE
1521		380	ļ	ļ				193.62				
1631	+	390	<u> </u>	 				193.64				
1541	+	460		ļ	499.8			193.62				
				ļ								
-	+					<u> </u>						
		<u> </u>										
<u> </u>							\\					
 												
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Mt. Rose #6



WASHOE COUNTY

DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

•••	12.1625 - 6
WELL A	entroux #2
PUMPING!	OBSERVATION WELL
PUMPING	RECOVERY DATA
PAGE	L OF 4



TYPE OF PUMPING TEST		
HOW Q MEASURED _or; fice	M.P. for WL's	elev.
HOW WI'S MEASURED Hormit 1000	DEPTH OF PUMP/AIRLINE	wrt
PUMPED WELL NO Montreux #2	% SUBMERGENCE: initial	pumping
RADIUS of PUMPED WELL	PUMP ON: date 2/19/00	time/085
DISTANCE from PUMPED WELL	PUMP OFF: date	time

TIME t = at t'=0					STATIC	WATER LI WATER LEVEL	EVEL D.	ATA		ATER DUCT	COMMENTS
LOCK	· MANAX	APSED T	ME t'	t /ť	READING	CONVERSIONS or CORRECTIONS	MATER	(S) or S'	h	a	(NOTE ANY CHANGES IN OBSERVERS)
006		ı			391.58			83,64	3	37.0	IN OBSERVERS)
		2			418.22			110.28	_ -	127	
		3			429.70			121.76		1	· · · · · · · · · · · · · · · · · · ·
		4			446.26			138.37		 	* · · · · · · · · · · · · · · · · · · ·
		5			457.30			149.30		 	
		6			457.34		•	149,40		1 1	·
		7			4 57.21			149,27		 	
		8			4 58.28	· · · · · · · · · · · · · · · · · · ·		150.34			
		9			459.37			151.43		 	······································
015	10	10			460.38			152.44			
		12			462,76			154.82			····
		14		·	463.55			155.61		1 1	
		16			464.96			157.02		 	
		18			466.18			158.24		1. 1	·
25	25	20			467, 15			159,21	·	 	· · · · · · · · · · · · · · · · · · ·
•		22			467.94			160,00		1	
		24			468.72			160.78			
		26			469.72			161.78		 	
		28			470,57			162,63		 	
		30			470.54			162,60	:		
		32			471.45			163.51		 	
		34			472.68			164.14			
1		36			472.33			164,39		 	
		38			472,89			164.95		1	
		40			473,39			165,45	·		
		42			474,27			166.33			· · · · · · · · · · · · · · · · · · ·
		44			474,55			166.61			
		.46			475,40			167.46			
		48			475,74			167.80			
		50			476.34			168.40			
		52			476.31			168.37			
		54			477.00			169.06			
		56			477.53			169.59			
		58			477,03			169.09			
05		60			477.72			169.78			
		62			477.75			169.81			
		64			477.85			169.91			
		66			478.63			170.69			
		68			478.57			170.63	- 1		
		70			478.98			170.94			
		72			479.29			171.35		 	
		74	l		471,51			171.57			
		76]	479.88			171 94	1		
		78	l	1	479,57			171.63			
25	20	80		_ 1	4130,48			172.54			



DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

PUMPING! OBSERVATION WELL
PUMPING! RECOVERY DATA
PAGE _____ OF _____



	<u></u>	•	
TYPE OF PUMPING TEST Constant Q	_		
HOW Q MEASURED	M.P. for WL's	elev	
HOW WI'S MEASURED 100 ps; pressure trans w) Hermit 10	ODEPTH OF PUMP/AIRLINE	wrt	
PUMPED WELL NO. Montroux # 2	% SUBMERGENCE: initial	pumping	
RADIUS of PUMPED WELL	_ PUMP ON: date/	time/005	,
DISTANCE from PUMPED WELL	PUMP OFF: date	time	

			_	25	**CLL			PUMP OF	F: date	-	time
1	TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 307.94				TER DUCT	COMMENTS
CLOCK TIME	mins hrs	APSED T	MEt'	t /ť	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'		Q	(NOTE ANY CHANGES IN OBSERVERS)
		84		L	480,54	<u> </u>		172.60		1	0202.112.10/
		88			481.36			173.42		 	
		92			481,80						
		96			482.83			174.89			
		100			483.30			175.36			
		120			489.40	-		176.46			
		140			486.16			178.22			
		160			488.07			180.13			*
1365		180			490.11			182.17			
1325		260			490,39			182.45			Q@ 36-ADJISTAT
1345		220			490.70			182.76		 	LACE DE PAULTSTUIT
1405	-4	240			492.15			184.21	·		<u> </u>
1425		260			472,96			185.02			· · · · · · · · · · · · · · · · · · ·
1445		280		•	42.77			184.83			
1505	15	300			494,37	-		186,43		-	
1525		320			494.65			184.71	35 26 3	757	OA
1545		340			493.84			185,90		737	(X)
1605	6	360			496.72			188.78	36/2		QĮ.
1625	206	380			495.97			188.03	3014		Ψ Ψ.
	406	400			497,10			189.16			
1705	-7	420			497.04	**	·	189.10			
1725		440			497,82			189.88			· · · · · · · · · · · · · · · · · · ·
1745		460			498.64			190.70		·	Q1=26=646 ap
1805		480			4 68 34			160,40			QV-20 = 676 gp
/33€		500			469.54			161 60			· · · · · · · · · · · · · · · · · · ·
1845		520			470.54			162.60			
1925		560	-		471.67			163.73			
1945		580			472.23			164.29			
2005		600			493,99			166.05			
2045		640			473.64			165.70			# Q had been creeping 4
2125		630			474.5			160.21	 -		Was shut completly
2.45		700			474.58			166.61	 	05	7670 aff'ng 500
2225		740			473.52			165.53		0 K	Adjusted & 9150
2305		780			475.27			167.33	 	97	Fine flow edintments
2325		300			475.68			167.74		-!-	FINE TIDE Editation
0005		840			477.06			169.12		0 X	DARREN LIFT for field
0045		880			477.81			169.87		∪ ∠ ~ ⁄	
3105		900		•	476,81			168.87			
2225		980			477.12			169.18			
1345		1000			419.23			171.29			
0515		1150			479.35			171.41			<u></u>
	40 40				479.70			171.76			
		1300			479 29			171.35	253/-	71.11-	Ec 4 8 80 Q1
										£10/9	Ec 1 8 50 Qf
0915	10/23	1340	1	ı	480.23	I	I	172.30	, ,		



DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

PUMPING / OBSERVATION WELL
PUMPING / RECOVERY DATA
PAGE 3 OF 4



TYPE OF PUMPING TEST Constant Q HOW Q MEASURED Orthor	M.P. for WL's	elev.
HOW WL'S MEASURED 100 psi pressure transducer	DEPTH OF PUMP/AIRLINE	wrt
PUMPED WELL NO. Montreex #2	% SUBMERGENCE: initial	pumping
RADIUS of PUMPED WELL	PUMP ON: date2/19/00	time
DISTANCE from PUMPED WELL	PUMP OFF: date	time

		Div	SIANCE	nom FC	NVIP ED 1	WELL			PUMP	OFF: date	,		urne	
	TIME t = at t'=0					STATIC	WATER LEVEL DATA STATIC WATER LEVEL 307.94					TER DUCT	COMMENTS	
	CLOCK	EL/ mins hrs	APSED T	ME t'	t /ť	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'		h	Q	(NOTE ANY CHANGES IN OBSERVERS)	
٥	1015		1450	·		478.44			170.50				EE	
	1105		1500			478.88			170.94	 			QT @ 1126	
	1145		1540			480.42			172.48		ا _{ما} 2		91 9 11.5	
			1600			4-82.46	· · · · · · · · · · · · · · · · · · ·		174.52		20	· ·	<u>-</u>	
	1345		1660			482.80			174.86					
	1445	40 28	1770			480.73			172.79					
	1545	10 39	1780			481.26			17-3.32	Υ				
	1645	40 30				481.39			173.45				Q1 @1730	
		40 31	1900			481.89	•		173.95		26			
;	1815		1930			483.74			175.80		26		hw	
	2245		2200		<u> </u>	484.81			176.84		4		Q4 2230 263/4"	
	2345		2260			487.07			179.13		26 42		Q4 26"	
,	0145		2380			494-24			176.30		26		7 2 2	
•	73 45		2500		 	483.30			175.36		26			
	545c		2620			484.71			176.77		26			
	0745		2740			486.73			178.04		26		Dan	
	2345		2300		 	483 63			175.73	 	26		1	
	1015		2330			485.75			177.81		م ے			
	1115		2950		i	486.22			178.23	 	26"			
	1145		2980		 	485.56			177.62	}	261		3,	
	1215		3010			486 38			178.44	 	رص ح		EE	
	1345	40 51				487.13			179.19	 				
	1515	10 53			 	488.07			180.13		Z53/4		Q+ 26-26/3 @ 3:00	
	1715	10 55		 		489.70			181.76		26		FLOW SMOUTH AT 4:00 - 5:00 24	
	2015			ļ		490.39			182.45		26		MW	
	2215		3(-(0	 	 	487.35			179.44		126		i prior	
	2345	40 61		 	 	490.08	•			-	- 20		EE	
,		40 G3	2020	 		490.86			182.14					
•	0145	40 66	1222		 	490.58			182.64		-			
	0445	10 69	4000	 	 				183.67	 				
	0715	40 41	4300	 	 	491.61			183.14	 		_	EE	
		10 95		 	 	490.48		L	182.54					
	1515	15	41.40	 		490.93		<u> </u>	182.89		 		<u> </u>	
	1715	10 14	4360	 		489.04	· · · · · · · · · · · · · · · · · · ·				261/6		" FLOW CONSTANT	
		10/81						 	181.10		20/16		TLOW CONSTANT	
		10 83		 	1	491.30			183.36					
				 				 -	183,80					
5		10 85	5110		 	491.46			193,53	 				
,	0245				 	490.45		 	182.51	 			DARKEN SOMS CHEWIC RYM ELLICIA - LIVE - BUY MANY MILE	
		10 21			 	492.02	ļ	ļ	184.08	 	1 -1 -: 1/			
	0715	10 93			 	492 49			13755	 	26-264		७० ७ व्यक्	
			5800	-		492,74		 	187.80	 	 			
		\leftarrow	6010	 	 	494.50		 	186.56		 			
ڡ			6200	 	┼	491.89		 	183.95	1	 	 		
UTIL-16		 	6400	 	 	491.24		 	133.30	 	 	 	140 (=v/r.h/ 7 ·	
5	<u> </u>		<u></u>	<u> </u>	<u> </u>	1	<u> </u>	<u> </u>	1	1	<u> </u>	1	MONTREUX 2	



DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

WELL MONTREYX #2

PUMPING) OBSERVATION WELL

PUMPING) RECOVERY DATA

PAGE 4 OF 4



	<u> </u>
TYPE OF PUMPING TEST CONSTANT Q	
HOW Q MEASURED L" x 5 %" ONLACE WELL	M.P. for WL's TOP PVC 1" STUL WELL elev.
HOW WL'S MEASURED 100 BL PT	DEPTH OF PUMP/AIRLINE 539' wrt
PUMPED WELL NO MONTHERN # 2	% SUBMERGENCE: initialpumping
RADIUS of PUMPED WELL	PUMP ON: date
DISTANCE from PUMPED WELL	PUMP OFF: date 2/29/00 time 1005

TIME t = at t=0		STATIC	WATER LEVEL DATA STATIC WATER LEVEL 307.94						COMMENTS			
CLOCK TIME	mins	APSED T	ME t'	t /ť	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	(S) or S'		h	Q	(NOTE ANY CHANGES IN OBSERVERS)
1145	109	6580			493.34			185.40				DAN
0315	10 113	6790		<u> </u>	493.84			185.90				
0645					496.19			188.25	-			
1005	1720						•					
1315		7390		·	494.40	*****		186.46				カムン
17:15		7630			496.88			138,94		26		pw noone
1745		7660			491.30			183.36		26		my ou site
2345		8020			495.16			187.22				200
0015		8050			489.70			181.76				JAS
0295		8200		•	495,94			188.00				EM
0545		83&)			4921,5			184.71				EM .
1215		8770			489.70		·	181.76				102
1345		୫୫%			497.01		•	189.07				JAS
1715		9070			496.00			188.06				Dan
1745		9100	•		492.03			184.14		•		Dan
2340		9430			489.04			181.10		614		MW
2345		9460			496.81		· · · · · · · · · · · · · · · · · · ·	178.87				pu
0345		9700			487.07			179.13				EE
2715	10 165	9910			486.85			178.91	2	26'/y		EE LANG FLOWMETERING 77
315	10 171	10270			489.98			182.04				And
1715	10 175	10510			491.52			183.53		۵4		707
1215	10 182	10930			492.52			184.58				Talked w Darra, all at au
3645	1700	1/3201			494,78			186.84		シベ		Dan OK. J
1245	194	11680			493.24			185.30			69	Downloaded Hermit-all of
1715	2 90				495.03			137.09	2	6/2	10	pm
2315	10 205	12310			497.64			139.10				EE O.K
0515	10 211	12670			497.66			189.72				· ·
1045	40 216	13000			497.29			189.35				
	10 222				495.37			187.43	2	6-26	1/8	EE FLOW SMOOT & 1700
3945	40 239	14380			498.60			190.66			.]	
						·						
						·						
									i_			
										_		
											<u> </u>	
						· · ·						
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DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

				(Mour
PUMPI	NG OB	SERVA	TION W	
PUMPII	NG RE	COVER	Y DATA	
PAGE	-,	OF	Z	



TYPE OF PUMPING TEST BACKGROUND STEP CONSTANT	
HOW Q MEASURED	M.P. for WL's TO ! ? V.C. elevelev
HOW WL'S MEASURED WATERINE 300	DEPTH OF PUMP/AIDLINE
PUMPED WELL NO. MONTREUX # Z Q = 750 gpm	% SUBMERGENCE: initial pumping
RADIUS of PUMPED WELL	PUMP ON: date 2/19/00 time 1005
DISTANCE from PUMPED WELL	PUMP OFF: date time

							• .			OFF. date			ume
	TIME t = at t'=0					WATER LEVEL DATA STATIC WATER LEVEL 244.95			WATER PRODUCT		COMMENTS		
	CLOCK TIME	mins hrs	APSED T	IME '	t /ť	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	Ĝ or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)
./7/	po		1			249.65					-		IN OBSERVERS)
191			1		·	243.77	· · · · · · · · · · · · · · · · · · ·		<u> </u>				
/17/	00					244.20							
/18/						244.63							
1/18/	ω				7	249.35							
	730		,			244.95							Dath
	1005		0	11	171	244.95	START CONSTANT	0 /	777	7 7 7	77	77	RvH
	1026	21	2.1			245.31	CONTROL CONSTITUTION		0.36	7.7		/	EE
	1030	25	25			245.39			0.44		•		EE
	1035	بريو	30			245.56			0.44				
1	1040	35	35			245.63							
	1045		40			245.73			0.68				
	1055		50			245.95	 		0.78				
	1105		60			246.13			1.00				
	1115	10	70			246.33	·		1.18				• •
'	1125	20 1	80						1.38				
	11 35	30	90			246.50			1.55				
	1145	40				246.66			1.71				
1	1232		100			246.80			1.85			,	
		17	147			247.50			2.55				•
)	1322	3	197			248.10			3.15	` .			•
		\leq				248.48			3.53				
	1505	25	300			249.15			4.20				
	1630 1820	556	385 49€			249.91			4.96				·
						250.69			5.73				Q Reduced to 646 gpm
•	1920		<i>555</i>		<u> </u>	250.90			5.95	•			@ 460 mins
	2020		615			251.09			6.14				
1	2120		675	ļ		251.47			652				
	2220		735			251.77			6.82				
	2320		795			252.00			7.05				
	0020		855			252.21			7.26				
1 1	3120		715			252.51			7.56				
	0230		785			252.73		•	7.78				
ı	0350		1075			252.90			7.95				
	0525		1160			253.13			8.18				
	· · · · · · · · · · · · · · · · · · ·	10 22	1330			253.65			8.70				EÉ
	1005		1440			253.97			9.02				ч
	1105		1500			254 13			9.18				**
	· / V		1585			254.36			9.41				b
•	1505	29	1,740			254,75			9.80				
. '		45 30	1845			254.97			10.02	i	.		
	755		1910			255.18			10.23				-
	1730		2185			255.71			10.76				
اير	7155		_335			256.25			11.30			Ī	
	วร์นร์		-620			256.56			11.61				
5	2335 L		273 -		I	25032			11 37				CINDER DA
•			-						<u>_</u>			l	



DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

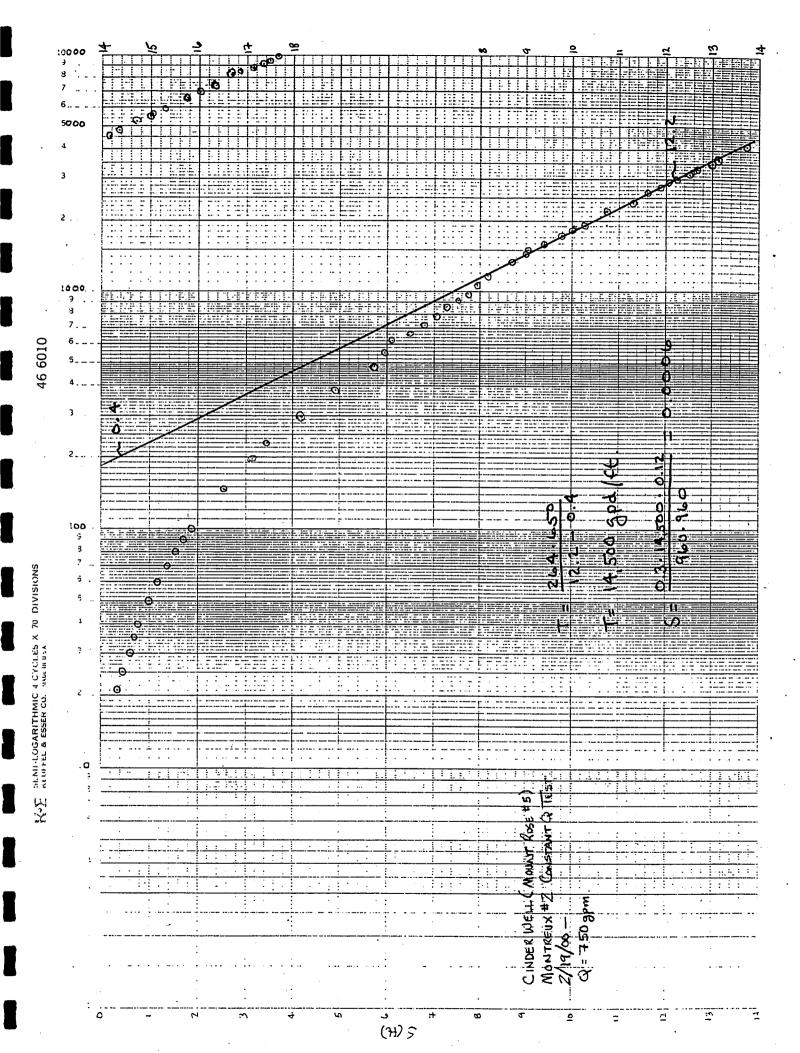
WELL CINDER WELL (M1. Rose #5)
PUMPING / OBSERVATION WELD
PUMPING / RECOVERY DATA
PAGE 2 OF 2



PUMPING TEST DATA

TYPE OF PUMPING TEST CONSTANT Q OF NEW MA	otreux (#2) Well
HOW Q MEASURED	AAD footable To Date
HOW WL'S MEASURED _ Water/ine 300	
	DEPTH OF PUMP/AIRLINE wrt
PUMPED WELL NO. Montreux #2 (#4 to Otm)	% SUBMERGENCE: initial pumping
RADIUS of PUMPED WELL	, ———— P——ping ———
DISTANCE from PUMPED WELL	
	PUMP OFF: date time
•	

	t =	TIME	ť=C)	STATIC	WATER LEVEL	EVEL D	ATA		WATER	COMMENTO
01.00					SIAIIC	WATER LEVEL	244.	95	P	RODUCT	COMMENTS
CLOC		S	м∈ t'	t/ť	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'		Q	(NOTE ANY CHANGES
1040		2915			257.09			12.44			IN OBSERVERS)
1150		2985			257.21			12.26			Dan
1450		3165			257.44	•		12.49			EE
1605		4 3240			257.54			12.59			ri CP
1705		5 3300			257.61			12.66			11
2030		3505			257.94			12.99			
2200		3595			258,11			13.16			kw
0700		4135			258.68			13.73			
1330		4525			259.12			14.17			EE
1800		4795	-		259.32						EE
2345	40	5140			259.68			14.37			1)
0615	10 32	15530			259.93			14,73			
0800	55 93	5635			260.02			14.98			Œ
2130		5935	5965		260.34			15.07			v .
1195		6550			260.74			15.39	_		EM
0630		11000	0500		261.00			15.79			DD
1340	1	7415			261.33			16.05			EÉ
1730	//-	7645			261.43	3///5		16.38			DD
0020		8155			261.65	26(-43		16.48			Mw
5.50								16.70			246
12:3		8386			261.83			110.88			EM
		8485			262.11	<u> </u>		17.16			105
1745		9100			262.32			17.37			DAN
2330	+	9445			262.40			17.45			w
0630		9865			262.60			17.65			£E.
13(5		10270			262.80			17.85			kw
1755	_	10550			262.63			17.88			
∞05		10,920			262,93			17.98			
0645		11320			263.05			18.10			DAN.
1220	· ·	11655			263,07			18.12			3-110
1730		11965			263.27			18.32			Mal
2350		12345			263.37			18.42			
0745		12820			263.54			18.59			EE EE
1515		13270			263.68			18.73			
2114		13629			263.82			18.87		1 1	INSTALL TRANSDUCER AUTOMA
0314		13989			263.80			18.85		- 8	EADINGS FROM THIS POINT ON
1004		14339			263.87						·
								18.92	 		
			$\neg +$							- -	
											
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						<u> </u>					
											
	<u> </u>									1 7	INDER





DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

WELL ONEW - Next	door to
PUMPING OBSERVATION WELL	Nance
PUMPING RECOVERY DATA	
PAGE OF I	•

Department of
è W.
W. L. D

CLOCK TIME 1400

<u>1040</u> 1545

1220

PUMPING TEST DATA

Behind house toward	back corne
of lot, follow rock	borden

. H		AEASI ID	ED C	CONST	HAT OF THE CONE	75			er log to	TOW YOCK DOVA
CES H	LIONA MAILA ASSAGLACIA					M.P. for WL's elev				
ום	IMPED	WELL N	N 7/	lauma	May (1001)		DEF	TH OF PUM	P/AIRLINE	wrt pumping
R	ADIUS A	of PLIMP	FD WEI	MWILLSFAX /	WELL (NIKG)	· · · · · · · · · · · · · · · · · · ·	%s	UBMERGEN	CE: initial	pumping
	w.00	/ · OIVII	LU VVLL	L			PUN	/IP ON: date	7/19/00	time large
			OWF ED	******			PUN	1P OFF: date	2/29/00	time
	TIME				MATERI		ATA			
			`		WATER L				WATER	001415150
= .	ai	t t'=0	J	STATIC	WATER LEVE	L 255.02	<u>'</u>	,	PRODUCT	COMMENTS
EL	APSED 7	IME	T	 	0017/770/01/0	LWATER		-		·
mins hrs		ť] t /t'	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	Sor S	•	Q	(NOTE ANY CHANGES
	415			255.02			+			IN OBSERVERS)
$\overline{}$	1475			254.97		 	0.00			NO SOUNDING Tu
$\overline{}$	3220			255.30		†	-0.05			EE
	4585		 	256.15		 	0.28	-		EE
	6030		 	255/61	- 11		1.13			
$\overline{}$	7465		T -	255,77		 	0.59			EM
_	8845			256.35		 	0,75			DD 7 "
	10305			156.30		 	1.33			15 Stilling Well Repu
	11685		 	256.17		 	1.28			nu
	13340					 	1,15			RV
	14365		 	256,75		 	173			RV.
$\overline{}$				256.64		ļ	1.62			Da N
$\overline{}$	14815			256.51			1.49			MARIO
$\overline{}$	16/23			256.60		ļ	1.58			コンドラ
$\overline{}$	17340			256,41			1.39			RV
	18990			250. 33			1.31			EM
		8775		756.08			1.06			EE
		10395		256.18			1.16			MARIU
		11755		751.JB	·		1.16			MARIE)
\leq	<u> 28990</u>	14590	1	56.47	<u> </u>		۲.۲			MARIO
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DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

WELL Nax	CL	
PUMPING LO	SERVATION WELL	
PUMPING / RE	COVERY DATA	
PAGEl	OF_\	

Department of	
613	
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	•

PUMPING TEST DATA & 6195 Philore e
Back of house, behind wire pen

		> 1	TYPE OF	PUMPIN	IG TEST	- <u>C</u> هم	ISTANT Q È RECE	s.yeu-i		Back ,	, ÷ 1	vouse	, behind wire per	`
	Water Res	ources h	HOW Q	MEASUR	ED <u> </u>	LECTKIC SO	UNDER		M.P	for WI's		,	ala	
	•		HOW WIL	s MEASI	JRED _	4 4			DEP1	TH OF PUN	IP/AIR	LINE	elev wrt	•
		F	PUMPED	WELL N	10. <u> </u>	UR6			% SU	IBMERGEN	ICE: in	itial	pumping	٠
		F	RADIUS	of PUMP	ED WEL	ւ			PUMI	ON: date	_2/	14 00	wrt pumping time	-
		L	DISTANC	E from P	UMPED	WELL			PUM	OFF: date	2/	29/00	time	-
			TIME	=			MATERIA							_
	ļ	t =		- t t'=0	`	OTATIO	WATER L	EVEL DA	AIA		W.	ATER	COMMENTS	
	<u></u> .			ι ι= <u>(</u>	,	SIAIIC	WATER LEVE	L 273.45			PRO	DUCT	COMMENTS	
	CLOCK	mins hr	LAPSED		4 /42		CONVERSIONS or	WATER				T	(NOTE ANY OLIVINIE	_
l.	TIME	hr	s t	t'.	t /t'	READING	CORRECTIONS	LEVEL	(S)or S'			Q	(NOTE ANY CHANGES IN OBSERVERS)	
	100	<u> </u>	 	 	 			273.67						-
	0930		+ 442		ļ	<u> </u>		273.45						-
	1705		420		├──	ļ		273.64					EE	-
	1050		1485		 -	 		273.72					EE	-
	1650 1435		3225	 	 	 		274.17	0.72				EE	_
2	1445		4590	 		 		214.45	1.00				11	
ī	1400		4040 7435	-	 	 		274.54	1.09				EM	1
	1310		8825			 		274,81					PD	Ĩ
l	1345		10300		 -	 		275,23				ļ	85]
	250		11685					275,30					und	
	1630		13345			<u> </u>		275,21				ļ	RV	
	0135		14370			<u> </u>		275,70	1.12				RV .	
• 1	.457		14810		· · · · · · · · · · · · · · · · · · ·			275.73				-	DAN	
	.135		16110					77551				 	MARD	1
וֹכ	11/5		17350					775,28				 	MARIO	4
	440			4595				275,15					RV Do we have le	4
	1225		23180			,	:	274,80					£ M	ł
	1512			10385		,		274.70				╁──┤	EE	ł
	1900			11755				274.82					MARIO	ł
이	१३७५		28980	14580				275.18					MARIN	ł
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Water Resources

WASHOE COUNTY

DEPARTMENT OF WATER RESOURCES **UTILITY SERVICES DIVISION**

<u>PUMP</u>			_	
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1 VIVI	\mathbf{m}			

WELL _	MNNIN	aham	
PUMPING /	OBSERVATIO	NWELL	
PUMPING /	RECOVERY	DATA	
PAGE	05		

PAGE	OF	<u> </u>
5900	Philoree	
Take drive a pad, well is	round house	togarage
pad, well is	near edge	ot garage
WL's	elev	Pa c

I OINI ING I LOI D	AIA
TYPE OF PUMPING TEST CONTANT Q . RECOVERY	Take drik around house to garage
HOW Q MEASURED	M.P. for WL'selev
HOW WL'S MEASURED	DEPTH OF PUMP/AIRLINE wrt
DADUIC -4 DUMPED MITH	% SUBMERGENCE: initial pumping
DIOTALIOT	PUMP ON: date
	PUMP OFF: date 2/29/00 time 1005

								rewire						
			TIME	: <u>_</u>			WATER LEVEL DATA							
	[.	t =		t'=C)	WATER LEVEL DATA STATIC WATER LEVEL 201.92						TER	COMMENTS	
						JIAIIC	VANIEN LEVE	⊥			PRODUCT		OCIVIIVIEIVIS	
	CLOCK	mins hrs	APSED T	IME t'	t /t'	READING	CONVERSIONS or	WATER	6-0		 	1	(NOTE ANY CHANGES	
1	IIME	hrs	t	T T	171	NEADING	CORRECTIONS	LEVEL	Sor S'			Q	IN OBSERVERS)	
you A	1520 C915		 		├	 		207.85			2/19	0730	Cinder=1=244.95	
	1644		399	 	 			207.92	0.00	<u> </u>				
	1020		1455	 	 -	-	 	207.98		<u> </u>			ब्रह	
	1530		3205		 		 	208.65					EE	
	1400		4555	 	 	 		209.56	1.64		-		EE	
ز:	1413		4008	 			· ·	210.12	2.20		ļ			
4	1416		7451					210.49	2.48	-	ļ		EM	
	1350		8865		<u> </u>	<u> </u>		210.85	293	 	 		DD	
	1410		10325		 	-		211,52	3,60	 	 		US Well had been on	
	1240		11675					211.35	3.73	 	 		NW	
	ा था		13325		<u> </u>	 		211.46		 			RV	
,	8910		14345					211.88	<u> 3.96</u>	 	 		₹	
<i>i</i>)	'519		14834	1.34			v				 		Dan	
•	E0c.		16138	1738				211.86		 	 		MARIO	
	1030		17305	7905				511.00		 	ļ	· · ·	MARIO	
	1420		18975					210,44	1.69	 			RV-GPS'd it, TOC	
Ţ	1200		23155					208.90	98	 			EM	
	1535		24810					708.83		 	ļi		RVH MONTREW WELL	
\prod_{i}	।यर्		26180					703.77	8	 			MARZIO	
0	370		29005					209.17	1.25				MARILY	
] "								COLL	1.72	 	-		MARIU	
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MRG

DEPARTMENT OF WATER RESOURCES

PUM	<u>PING</u>	TEST	DATA

WELL NOSSIE	
PUMPING OBSERVA	TION WELD
PUMPING / RECOVER	Y DATA
PAGEOF	<u> </u>
٠ .	

Department of	PUMPING T
	TYPE OF PUMPING TEST CONSTANT Q & RECOVERY
Water Resources	HOW Q MEASURED

HOW WL'S MEASURED

PUMPED WELL NO.

Well is acrosfence in junk stor (just off main road, near meta shed) M.P. for WL's

DEPTH OF PUMP/AIRLINE

_elev. _

wrt

_			DADILIO	VVELL	NO		156		% SL	JBMERGE	VCE: ir	nitial	pumping
			HADIUS	OT PUM	PED WE	ш			PUMI	P ON: date	2	119/10	timetime
}	,		DISTANC	E from	PUMPEC	MEIT	<u> </u>	PUMI	P OFF: dat	 e 7_	129/10	timetoos	
							SUBMERGENCE: initial						
)			TIM	ᆫ		ŀ	WATER I	EVFI C)ΔΤΔ			4===	
	1	t =	а	it t'=	:O	STATI	C WATER LEVE	1 040 17				ATER	COMMENTS
•	-							L X*1.1.1	-		PRO	DOUCT	OCIVIIVIE 1412
	CLOC	K mins	LAPSED		- t /t'	DEADING	CONVERSIONS or	WATER	Ta :	1		T	410
2/12	LIME	1 h	rs t	ť	1 1/1	READING	CONVERSIONS or CORRECTIONS	LEVEL	S or S'	1		l Q	(NOTE ANY CHANGES IN OBSERVERS)
-/10	<u> </u>	0						249.05	+	<u> </u>		 	IN OBSERVERS)
196	0 092		1-					249, 17				+	
la d	1650	+	405					244.17					
20/0	1030	+	1465					244.59				+	GE
/21	1540		3215					250.24				 	PUMP MAY SE AN , QUIET BOZZ
./22	1415		4570					250.79					EE -SAME QUIET BUZZ
	1422		6017	\cdot L				250.99		 			EE .
-124			744!	5				251.36	2,19				EH
-125			8855	5	T			251.85				ļ	DD
126	1400		10315		1	 	· · · · · · · · · · · · · · · · · · ·	152.60					12
127	1245		11680			 	 						NW
128	1620		13335		 	 		25198	2.81				RN
بتنه	0920		14355		 	 		252,57		•			RV
المراج	530		_	445	- 	 		252.65				L	DAW
ĥ			1/0/3	173		┼──		152.57					MARIO
	1050		1322	2929	} 	 		757.20					HARID
./2	1430		1000	450		 -		251.82	2.65				RV
م 10/ح	1210		11010:	4585	'	<u> </u>		251.47	2.3				EM
1			63165	8765	-	ļ	·	250.65	1.48				EE _
	1415			10405		<u> </u>		25 Dec	1.38				HAR ID
16	12.7		16170	11770	?			250.43	1.26				MAP IO
110	24		129000	14600	<u>'</u>			_50.65	1.48				MARIO
	ļ		 	ļ	 		•						LAICIO
_				<u> </u>									
	<u> </u>				<u> </u>					-			
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DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

	LOUNT ROSE #6
PUMPING	OBSERVATION WELD
PUMPING	RECOVERY DATA
PAGEI	OF

PUMPING TEST DATA

FOR	Interference	effects
CALL	LLATIONS .	

TYPE OF PUMPING TEST CONSTANT Q	CALCULATIONS.
HOW Q MEASURED AUTOMATED	M.P. for WL's ToC elev.
HOW WL'S MEASUREDACTAT WATER LIVE ELECTRIC SOWNER	DEPTH OF PUMP/AIRLINE wrt
PUMPED WELL NO. CINDER/MR \$5	% SUBMERGENCE: initialpumping
RADIUS of PUMPED WELL	PUMP ON: date 3/9/60 time 0925
DISTANCE from PUMPED WELL	PUMP OFF: date time

								/ 01411	Oi i . uai	٠ <u> </u>		time
ı		TIME				WATER LI	EVEL D	۸۳۸	,			
1	t =		t'=C	`	STATIC	WATER LEVEL		MIM.		1	TER	COMMENTS
			1-0	,	SIAITO	307.		PRO	DUCT	OOMINIENTS		
CLOCK	Mins hrs	APSED T		1 /11	1	CONVERSIONS or	WATER		1	 		(NOTE ANY CHANGES
TIME	hrs	t	ť	t /t'	READING	CORRECTIONS	LEVEL	⑤or S'		1	Q	IN OBSERVERS)
0934		9			307.76			0.29			1800	Quariable into system
0940		15			307.90			0.43		1	-	
0945		20			307.97			0.50				
0950		25			308.13			0.66	-			,
	30	30			308.23			0.76		<u> </u>		
1000		35.			308.37			0.90				
1005		40			308.48			1.01				
1010	45	45	,		308.58			1,11			- "	·
1017	51	52			308.70			1.23				
1027		62			308.91			1.44				
1035		70			309.07			1.60				
1045		80			309.25			1.78	<u> </u>			
1055	30 1	90			309.42			1.95				
1105	40 1	100			309.57			2.10	·			
11115	20	110			309.73			2.26				
1125	72	120			309.90			2.43				
1135		130			310.04			2.57				
1145	<u> </u>	140			310.18			2.71				
1155		150			310.32			2.85				•
1205	40 2	160			310.48			3.01				· · · · · · · · · · · · · · · · · · ·
1225	3	180			310.72			3.25				· · · · · · · · · · · · · · · · ·
12-15		200			311.04			3.57				
. 63 05		220			311.19			3.72				
1315		240			311.44			3.97				
1345		260			31.66			4.19				
1900		280			31, 81			4.34	-			
1420		3U)			311.96			4.49				
440		320	The state of the s		312,18			4.71				
1500		340			312, 34			4.87				<u> </u>
1530		370			31257			5.10				· · · · · · · · · · · · · · · · · · ·
1600		400			37.06			4.59		 -[
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Jacob's equation can be used for this calculation, namely:

$$s(r,t) = \frac{264 * Q}{T} * log(\frac{0.3 * T * t}{r^2 * S})$$

$$s(900 \text{ ft}, 90 \text{ days}) = \frac{264 * 1000}{79000} * log(\frac{0.3 * 79000 * 90}{900^2 * 0.0025}) = 10.1 \text{ ft}$$
3.34 * 3.0

$$S = 0.0008 = 10.1 \times 1.90 = 13.2 \text{ ft}$$

$$S = 0.0003 = 10.1 \times 2.32 = 23.5 \text{ ft}$$

Additional Drawdowns @ #6 with #5 on @ 800 gpm

10 days with both wells on, #6 @ 650 gpm

Max pumping level @ #6

From 10-day test = 500 ft $+ s(900 \text{ ft}, 10 \text{ days}) = \frac{264.650}{17.200}, \log \frac{(0.3.17,000.10)}{4000.50}$

520 ft pumping level @ #6 after 10

days of continuous pumping @ 800 (#5)

and 650 (#6). 35.4 acft from #5

23.7 acft from #6

64.1 Acft in 10 days

30 days

Extrapolated from 10-day test to 30 days = 520ft

5 (900ft, 30days) = 264.650 100 (0.3.17,000.30) = 17000 100 (0.3.17,000.30)

10.1 , 2.65 = 26.8

547 ft pumping level No 6 after 30 days

APPENDIX C

Water Quality

IN TRIPLICATE (PLEASE PRINT OR TYPE)

IEVADA STATE HEALTH LABORATORY University of Nevada School of Medicine/385

CALIFIC DRATORY Reno, N

Reno, Nevada 89557 (775) 688-1335

WATER CHEMISTRY ANALYSIS:

Attn: Fees may apply to some types of samples.

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

SAMPLING The sample sub face water samp be pumped thor least three times for about ten (10 Sampled by Owner Address REPORT TO Name Address Address Address	in For ROUTIN constituents no interest must be less should be accoughly before so Product water by minutes. The Hule County Box 1	e representative of since of dirt and do sampling, changing from filters should be sampling. Page 1130 Since the Since Wall and the Since	of the source.	Spring and sur- le. Wells should in the casing at d after running 1-00 da unty)	Township General Source A REASO Loan Person Purch Rental Subdit Other SOURC Filter Public Spring Well	DN FOR ANA nal health reasc ase of the proposition approval E OF WATE Yes No Yes No	Range	USE OF WA Domestic de Geothermal Industrial or Irrigation Other Initials	TER: rinking water mining
	7	The results belo	w are repre	sentative only				tory.	•
1				ORY USE ON				PRINT OTH	ER DESIRED
Constitution 10	187 _{pm}	Constituent 28	.9 թթո5	ConstituentO.	O ppin	Constitute fi 3	807 s.u.	CONSTITUE Constituent	NTS BELOW
180° C.	165	Chloride	. 1	Iron	0.04	Color	3	Cd	ppm / / / / / /
Hardness	88	Nitrate -N	0.2	Manganese	0.00	Turbitity	1.0	Co	10001
Calcium	17	Alkalinity	112	Copper	0.00	рН	7.34	Ha	<0.0005
Magnesium	11	Bicarbonate	137	Zinc	0.01	EC	229	Se	11 0-01
Sodium	13	Carbonate	0	Barium	0.07	SI@20C	-0.89	5b	<0.001
Potassium	6	Fluoride C	0.04	Boron	0.0			Be	<0.001
Sulfate	2	Arsenic < 0.	003	ilica	62	,		. 21	(1.00)
70554	(3plije	MBAS	KO.1	NO.2	<0.01	CN-	<0.005	T/ .	<0.0005
9255 B	15pa/4		U.D.		- 1				
Collected by	030	m 83.11	Remarks	New	11,3 9 We1	00 i	***************************************	M 3-	13-00
Sec. Cull be Pus 3030-04 where equipped oute Recid Init (1) COUL									
		per liter; S.U. = Star	idard Units	i pali			••••••	••••••	(Rev. 6/99



Alpha Analytical, I 255 Glendale Ave. • Suite 21 • Sparks, Nevada 89434-5778 (775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Washoe County Utility Division

P.O. Box 11130

Reno, NV 895200027

Job#:

Phone: (775) 954-4625

Attn: Terri Svetich

Alpha Analytical Number: WCU00022429-01A

Client I.D. Number: Mt. Rose #6

Sampled: 02/24/00 Received: 02/24/00

Analyzed: 02/24/00

SDWA Volatiles (plus Lists 1 & 3 Unregulated) EPA Method 524.2

		Concentration	Reporting	<u>-</u>	Concentration	Reporting
	Compound	. μg/L	Limit	Compound	μg/L	Limit
1	Benzene	ND	0.500 µg/L			
2	Vinyl chloride	ND	0.500 µg/L	38 cis-1,3-Dichloropropene 39 2,2-Dichloropropane	. ND	0.500 µg/L
3	Carbon tetrachloride	ND	0.500 μg/L		ND	0.500 µg/L
4	1,2-Dichloroethane	ND	0.500 µg/L		ND	0.500 μg/L
5	Trichloroethene	ND	0.500 μg/L	11,1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	ND	0.500 μg/L
6	1,4-Dichlorobenzene	ND		42 1,2,3-Trichloropropane	ND	0.500 μg/L
7	1.1-Dichloroethene	ND	FG-	43 Bromochloromethane	ND	0.500 μg/L
8	1,1,1-Trichloroethane	סא	F-0-	44 n-Butylbenzene	ND	0.500 µg/L
9	cis-1,2-Dichloroethene	ND		45 Dichlorodifluoromethane	ND	0.500 µg/L
10	1,2-Dichloropropane	ND .	0.500 . μg/L	46 Trichlorofluoromethane	ND	0.500 µg/L
11	Ethylbenzene	ND	0.500 µg/L	47 Hexachlorobutadiene	ND	0.500 µg/L
12	Chlorobenzene	ND ND	0.500 μg/L	48 Isopropylbenzene	ND	0.500 µg/L
13	1,2-Dichlorobenzene	ND ND	0.500 μg/L	49 4-Isopropyltoluene	ND	0.500 µg/L
14	Styrene	ND	0.500 μg/L	50 Naphthalene	_ ND	0.500 µg/L
15	Tetrachloroethene	ND .	0.500 μg/L	51 n-Propylbenzene	· ND	0.500 µg/L
16	Toluene	ND	0.500 μg/L	52 sec-Butylbenzene	ND	0.500 µg/L
17	trans-1,2-Dichloroethene	- 1	0.500 µg/L	53 tert-Butylbenzene	ND	0.500 μg/L
18	Xylenes, total	ND	0.500 µg/L	54 1,2,3-Trichlorobenzene	ND	0.500 µg/L
19	Dichloromethane	ND	0.500 µg/L	55 1,2,4-Trimethylbenzene	ND	0.500 μg/L
20		ND	0.500 µg/L	56 1,3,5-Trimethylbenzene	ND	0.500 µg/L
	1,1,2-Trichloroethane	ND	0.500 µg/L	57 Methyl tert-butyl ether (MTBE)	ND	0.500 µg/L
21	1,2,4-Trichlorobenzene	. ND	0.500 µg/L		1	, олого руг
22	Bromobenzene	ND .	0.500 μg/L	* -	•	
23	Bromodichloromethane	ND	0.500 μg/L .			
24	Bromoform	, ND	0.500 µg/L			
25	Bromomethane	ND	0.500 µg/L		•	
26	Dibromochloromethane	ND	0.500 µg/L			
27	Chloroethane	ND	0.500 μg/L	*		
28	Chloroform	ND i	0.500 µg/L	•		
29	Chloromethane	ND	0.500 μg/L		•	
30	2-Chlorotoluene	ND	0.500 μg/L	•		
31	4-Chlorotoluene	ND	0.500 µg/L			•
32	Dibromomethane	ND	0.500 µg/L			
33	1,3-Dichlorobenzene	ND	0.500 µg/L	,		
34	1,1-Dichloroethane	ND	0.500 µg/L	•		
35	1,1-Dichloropropene	ND	0.500 µg/L		•	
36	1,3-Dichloropropane	ND			+	
37	trans-1,3-Dichloropropene	ND	F.J -			
		. 110	0.500 µg/L			

pH = 2

ND = Not Detected

Phase I Regulated Compounds (1-8); Phase II Regulated Compounds (9-18); Phase V Regulated Compounds (19-21); List 1 Unregulated Compounds (22-41); List 3 Unregulated Compounds (42-56); and, Additionally requested Compounds (57+).

Approved By:

Roger L. Scholl, Ph.D.

Date

3/7/00

Roger L. Scholl, Ph.D. Laboratory Director





Client: Washoe County Utility Division

P.O. Box 11130

Reno, NV, 895200027

Attn: Terri Svetich

Client Sample ID: Mt. Rose #6

Lab Sample ID: 00022429-01A

Date Sampled: 2/24/00

Date Received: 2/24/00

Matrix: Aqueous

PWS/DWR#:

National Primary Drinking Water Phase II and Phase V - Regulated and Unregulated Synthetic Organic Compounds (SOCs)

Analyte	10la	·	- • •.	Date	•				Date ·
	Result	R.L.	Units	Analyzed	Analyte	Result	R.L.	Units	Analyzed
E504.1 EDB AND DBCP				••	E525.2 SVOCS BY GCMS				
1,2-Dibromoethane	ND		μg/L	3/2/00	Propachlor	ND	1.0	μg/L	3/10/00
1,2-Dibromo-3-chloropropane	ND	0.020	μg/L	3/2/00	Simazine	ND		μg/L	3/10/00
E505 ORGANOHALIDE PE	STICIDE	ES ANI	D PCBS	, in	Atrazine	ND	0.10	μg/L	3/10/00
Hexachlorocyclopentadiene	ND	0.10	μg/L	3/1/00	Metribuzin	. ND	1.0	μg/L	3/10/00
Hexachlorobenzene	ND	0.10	μg/L	3/1/00	Alachlor	ND	0.20	μg/L	3/10/00
gamma-BHC	ND	0.020		3/1/00	Metolachlor	ND	1.0	μg/L	3/10/00
Alachlor	ND	0.20	μg/L	3/1/00	Butachlor	ND	1.0	μg/L	3/10/00
Heptachlor	ND	0.040		3/1/00	bis(2-Ethylhexyl)adipate	ND	0.60	μg/L	3/10/00
Aldrin	ND	0.20	μg/L	3/1/00	bis(2-Ethylhexyl)phthalate	ND	0.60	μg/L	3/10/00
Heptachlor epoxide	ND	0.020	μg/L	3/1/00	Benzo(a)pyrene	ND	0.020	μg/L	3/10/00
Dieldrin	ND	0.20	μg/L	3/1/00	E531.1 CARBAMATES		•		
Endrin	ND	0.010	μg/L	3/1/00	Aldicarb sulfoxide	ND	0.50	/7	2/0/00
Methoxychlor	ND	0.10	μg/L	3/1/00	Aldicarb sulfone	ND	0.80	μg/L	3/8/00
Chlordane	ND	0.20	μg/L	3/1/00	. Oxamyl	ND	2.0	μg/L	3/8/00
Toxaphene	ND	1.0	μg/L	3/1/00	Methomyl	ND		μg/L	3/8/00
Aroclor 1016	ND	0.080	μg/L	3/1/00	3-Hydroxycarbofuran	ND	1.0	μg/L	3/8/00
Aroclor 1221	ND		μg/L	3/1/00	Aldicarb	ND		μg/L	3/8/00
Aroclor 1232	ND		μg/L	3/1/00	Carbofuran	ND		μg/L	3/8/00 3/8/00
Aroclor 1242	ND		μg/L	3/1/00	Carbaryl	ND		μg/L	3/8/00
Aroclor 1248	ND		μg/L :	3/1/00	•	ND	1.0	μg/L	3/8/00
Aroclor 1254	ND		μg/L	3/1/00	E547 GLYPHOSATE				
Aroclor 1260	ND		μg/L	3/1/00	Glyphosate	ND	6.0	μg/L	3/6/00
E515.1 CHLORINATED ACID	HÉRBIC		• •		E548.1 ENDOTHALL				
Dalapon	ND		μg/L	3/4/00	Endothall	ND	9.0	μg/L	3/3/00
Dicamba	ND		μg/L μg/L	3/4/00	E549.1 DIQUAT/PARAQUAT			· ·	
2,4-D			μg/L μg/L	3/4/00	Diquat	ND	0.40	μg/L	3/2/00
PCP			μg/L μg/L	3/4/00	-		J. 10	r& =	3,2,00
2,4,5-TP			μg/L μg/L	3/4/00					•
Dinoseb				3/4/00					
Pichloram			μg/ L 	3/4/00					
	.10	V. 10	μg/L	314100		•			

ND = Not Detected

Approved By:

Dalter finedman

Date:

3/15/00

Walter Hinchman

Quality Assurance Officer



Alpha Analytical, 255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778 (775) 355-1044 • (775) 355-0406 EAX • 1-800-283-1183

RECEIVED

MAR 2 0 2000

DEPT OF WATER RESOURCES

CASE NARRATIVE March 15, 2000

One sample was received on 02/24/00 for the analyses of SOC compounds for source compliance monitoring in the state of Nevada. Sample containers were received in good condition.

Alpha Analytical ID	Client ID	Date	Time	Collected	
WCU00022429-01	Mt. Rose #6	02/24/0			7

METHOD 504.1:

Your sample was spiked as the batch Laboratory Fortified Matrix (LFM). All QC criteria were met with no abnoromalities.

METHOD 505:

Your sample was spiked as the batch LFM. All QC criteria were met with no abnormalities.

METHOD 515.1:

Your sample was spiked as the batch LFM. All QC criteria were met with no abnormalities.

METHOD 525.2:

All QC criteria were met with no abnormalities.

METHOD 531.1:

All QC criteria were met with no abnormalities.

METHOD 547:

All QC criteria were met with no abnormalities.

METHOD 548.1:

All QC criteria were met with no abnormalities.

METHOD 549.1:

Your sample was spiked as the batch LFM. All QC criteria were met with no abnormalities.

Walter J. Hinchman

Quality Assurance Officer

3/15/00

Date



MONTGOMERY WATSON LABORATORIES

a Division of Montgomery Watson Americas, Inc. 555 East Walnut Street Pasadena, California 91101 Tel: 626 568 6400 Fax: 626 568 6324 1 800 566 LABS (1 800 566 5227)

RECEIVED MAR 0 9 2000

DEPT. OF WATER RESOURCES

Laboratory Report

for

Washoe County Dept. of Water Resources 4930 Energy Way

> Reno , NV 89502-4106

> Attention: John Hulett Fax: (775) 954-4610

MONTGOMERY WATSON LABS.
SUBJITTED ON

MAR 03_2000

HDS Hillary Strayer

Report#: 63231

DRINKING

atgomery Watson Laborator

555 E. Walnut St., Pasadena, CA 91101 PHONE: 626-568-6400/FAX: 626-568-6324

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Washoe County Dept. of Water Resources

4930 Energy Way Reno, NV 89502-4106

Attn: John Hulett

Customer Code: WASHOE

PO#: 179701

Group#: 63231 Project#: DRINKING

Proj Mgr: Hillary Strayer

The following samples were received from you on 02/25/00. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Montgomery Watson Laboratories.

Tests Scheduled

Sample#

Sample Id

Matrix

Sample Date

2002250072 MT ROSE 6

Water

02/24/00

Test Acronym Description

Test Acronym

Description -

@RN

Radon 222

CHAIN OF CUSTODY RECORD (, 323) MONTGOMERY WATSON LABORATORIES

MWLABS USE ONLY:

ï

LOGIN COMMENTS	
	•
555 E. Walnut St., Pasadena, CA 91101	(800) 566-5227
555 E. Walnut St.,	(626) 568-6400

SAMPLES CHECKED/LOGGED IN BY:

SAMPLE TEMP, RECEIPT AT LAB:

BLUE ICE: FROZEN PARTIALLY FROZEN

THAWED

13:30 SAMPLER COMMENTS (check for yes) ANALYSES REQUIRED (mark an 'X' in all tests required for each sample line) 2-24-00 25-52 DATE REFER TO ATTACHED BOTTLE ORDER FOR ANALYSES COMPANYTITLE PRINT NAMI COMP 4 PROJECT JOB#/P.O.# IDENTIFIER Mt Rose ナシーナ SAMPLER(S): PRINTED NAME AND SIGNATURE LOCATION TO BE COMPLETED BY SAMPLER: 8-45 2-24-A TIME DATE RELINQUISHED BY: RELINQUISHED BY: RELINQUISHED BY: PROJECT NAME RECEIVED BY: RECEIVED BY: RECEIVED BY:

<u>'</u>



MONTGOMERY WATSON LABORATORIES

a Division of Montgomery Watson Americas, Inc. 555 East Walnut Street

Pasadena, California 91101 Te1: 626 588 6400 Fax: 626 568 6324 1 800 566 LABS (1 800 566 5227) Laboratory Report #63231

Washoe County Dept. of Water Resources John Hulett 4930 Energy Way Reno , NV 89502-4106

Samples Received 25-feb-2000 09:38:00

Prepared	Analyzed	QC Batch#	Method	Analyte	•	Result	Units	MRL	Dilution
MT ROSE	6 (200	2250072	2) 5	Sampled on	02/24/00				
	02/26/00 02/26/00	111557 111557	Radon 2 (SM7500RN (SM7500RN) Radon 222	Two Sigma Brror	340 19.1	pCi/l pCi/l	50 0.0000	1



MONTGOMERY WATSON LABORATORIES

a Division of Montgomery Watson Americas, Inc. 555 East Walnut Straet Pasadena, California 91101 Te1: 626 568 6400 Fax: 626 568 6324 1 800 568 LABS (1 800 566 5227) Laboratory QC Report #63231

Washoe County Dept. of Water Resources

QC	Batch	#111557	•	Radon	2
Z . –	_ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	// /		Kauuii	4.

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	DDD (4)
LCS1	Radon 222	1000	1130	113.0	(80.00 - 120.00)	RPD (%)
LCS2	Radon 222	1000	1100	110.0		2.7
MBLK	Radon 222	ND .	. * *		(00.00 - 120.00)	2.7

Spikes which exceed Limits and Method Blanks with positive results are highlighted by <u>Underlining.</u> Criteria for MS and DUP are advisory only and not applicable for ICR monitoring.

>>>> Welenco, Inc.>>> DIRECTIONAL SURVEY

Date: 3-28-2000

Company : LANG EXPLORATORY DRILLING

Well No : MONTREUX #4

Field : RENO State : NEVADA

State: NEVADA County: WASHOE Witnessed By: BONEY Rec. By: DAN IHDE

Location : CORNER OF BORDEAUX & LAKE GENEVA

Remarks : GYRO NO. 2444

	Measured	Incli-	Direc-	Course	True	Closure	Closure	~ ~, ~ ~
	Depth,	nation,	tion,	Deviation,	Vertical	Distance,	Bearing,	
	Feet	Degrees	Degrees	Feet	Depth,	Feet	Degrees	
			True		Feet		True	
	0	0.0	83 .	0.00	0.00	0.00	0.0	
	50	0.2	133	0.07	50.00	0.07	130.0	
	100	0.1	271 ·	0.10	100.00	0.11	143.3	
	150	0.1	158	0.06	150.00	0.12	160.1	
	200	0.1	330 ·	0.07	200.00	0.11	163.3	
	250	. 0.1	167	0.10	250.00	0.13	169.0	
	300	0.0	168	0.07	300.00	0.20	168.2	
	350	0.2	132	0.10	350.00	0.29	158.0	
	400 .	0.0	227	0.09	400.00	0.37	152.7	
	450	0.1	89	0.03	450.00	0.39	149.3	
	500	0,1	215	0.08	500.00	0.42	151.6	
	550	0.1	76	0.08	550.00	0.45	153.3	
	600	0.1	137	0.09	600.00	0.52	148.2	
	650	0.1	270	0.09	650.00	0.55	150.1	
	700	0.2	121	0.13	700.00	0.62	148.6	
	745	0.2	153	0.18	745.00	0.79	146.3	
t d	*******	*****	*****	*****				غاد ماد ماد ماد

Equip.: L-18 Office: BFL Job No.: 32437

Calculation Method: Balanced Tangential

APPENDIX D
Drilling Cost Invoices

Lang exploratory printing a division of Boart Longyear Company 2745 West California Avenue Salt Lake City, Utah 84104-4579 USA Telephone: 801-973-6667 Fax: 801-973-4572



LANG EXPLORATORY DRILLING

15313299 January 24, 2000

Montreux Joint Venture a Nevada General Partnership 16475 Bordcaux Drive Reno, Nevada 89511 Attention: Mr. Rob Nichols

Drilling at the Montreux Well #4 Project near Reno, Nevada. Driller: V. Hardie & A. Beaudoin. Rig: LK-13. Drilling Period: January 19, through January 22, 2000.

DATE	WELL	DESCRIPTION / WORK	
01/19/00	#4	Mobilization / Demobilization	\$ 23,000.00
01/22/00	#4	40 ft @ \$ 175.00/ft Drilling 29" hole	\$ 7,000.00
		Subtotal	\$ 30,000.00
		TOTAL	\$ 30,000.00

INVOICE TOTAL \$235,002.20

PAYMENT DUE UPON RECEIPT

Lang Exploratory Drilling a division of Boart Longyear Company 2745 West California Avenue Salt Lake City, Utah 84104-4579 USA Telephone: 801-973-8667 Fax: 801-973-4572



LANG EXPLORATORY DRILLING

15313302 January 31, 2000

Montreux Joint Venture a Nevada General Partnership 16475 Bordeaux Drive Reno, Nevada 89511 Attention: Mr. Rob Nichols

Drilling at the Montreux Well #4 Project near Reno, Nevada. Driller: V. Hardie & A. Beaudoin. Rig: LK-13. Drilling Period: January 23, through January 29, 2000.

DATE	WELL	DESCRIPTION / WORK	
01/23/00	#4	65 ft @ \$ 175.00/ft Drilling 29" hole	\$ 11,375.00
		100 ft of 22 inch Casing furnished & installed @ \$65.00/ft	\$ 6,500.00
01/24/00	#4	105 ft @ \$ 45.00/ft Furnish & install sanitary seal	\$ 4,725.00
01/25/00	#4	15 ft @ \$ 90.00/ft Drilling 19" hole	\$ 1,350.00
01/26/00	#4	160 ft @ \$ 90.00/ft Drilling 19" hole	\$ 14,400.00
01/27/00	#4	190 ft @ \$ 90.00/ft Drilling 19" hole	\$ 17,100.00
01/28/00	#4	175 ft @ \$ 90.00/ft Drilling 19" hole	\$ 15,750.00
01/29/00	#4	98 ft @ \$ 90.00/ft Drilling 19" hole	\$ 8,820.00
. PA	YMENT DUE	Subtotal Subtotal	\$ 80,020.00
		TOTAL	\$ 80,020.00

Lang Exploratory Uniling a division of Boart Longyear Company 2745 West California Avenue Salt Lake City, Utah 84104-4579 USA Telephone: 801-973-6667 Fax: 801-973-4572



LANG EXPLORATORY DRILLING

15313308 February 7, 2000

Montreux Joint Venture a Nevada General Partnership 16475 Bordeaux Drive Reno, Nevada 89511 Attention: Mr. Rob Nichols

Drilling at the Montreux Well #4 Project near Reno, Nevada. Driller: V. Hardie & S. Belliston. Rig: LK-13. Drilling Period: January 30, through February 4, 2000.

DATE	WELL	DESCRIPTION / WORK	•	• . •
01/30/00	#4	17 ft @ \$ 90.00/ft Drilling 19" hole	\$	1,530.00
	•	Charge for geophysical logs	\$	4,200.00
01/31/00	#4	554 ft of 14 inch Casing furnished & installed @ \$35.00/ft	S	19,390.00
		200 ft of 14 inch Screen furnished & installed @ \$52.00/ft	\$.	10,400.00
		10 cubic yds of Gravel pack furnished & installed @ \$390.00/cu.yd	\$	3,900.00
02/01/00	#4	17.75 cubic yds of Gravel pack furnished & installed @ \$390.00/cu.yd	\$	6,922.50
		9.5 hrs @ \$ 375.00/hr Trip in & develop well	\$	3,562.50
02/02/00	#4	24 hrs @ \$ 375.00/hr Developing well	\$	9,000.00
02/03/00	#4	17 hrs @ \$ 375.00/hr Develop & clean out bottom of well	\$	6,375.00
		1.13 cubic yds of Gravel pack furnished & installed @ \$390.00/cu.yd	\$	440.70

a division of Boart Longyear Company 2745 West California Avenue Salt Lake City, Utah 84104-4579 USA Telephone: 801-973-6667 Fax: 801-973-4572



LANG EXPLORATORY DRILLING

15313308 February 7, 2000

Charge for chemicals to treat well & for well head \$800.00

02/04/00 #4 Demobilization N/C

Subtotal \$66,520.70

PAYMENT DUE UPON RECEIPT

PLEASE REMIT TO: BOART LONGYEAR COMPANY, SDS 12-0734, P.O. BOX 86, MINNEAPOLIS, MINNESOTA 55486-0734

8/2.9

Lang Exploratory Drilling a division of Boart Longyear Company 2745 West California Avenue Salt Lake City, Utah 84104-4579 USA Telephone: 801-973-6667

Fax: 801-973-4572



LANG EXPLORATORY DRILLING

15211860 March 1, 2000

Montreux Joint Venture a Nevada General Partnership 16475 Bordeaux Drive Reno, Nevada 89511 Attention: Mr. Bob Nichols

Install Pump and Develop Well #4 near Reno, Nevada. Operators: D. Howard & E.Daren. Rig: LX-29. Work Period: February 11, through February 29, 2000.

DATE	WELL	DESCRIPTION / WORK		·
02/12/00	#4	533 ft @ \$ 9.00/ft Furnish & install pump	\$	4,797.00
02/13/00	#4	6 ft @ \$ 9.00/ft Finish installing pump	\$	54.00
02/14/00	#4	9 hrs @ \$ 160.00/hr Test pumping well	.\$	1,440.00
02/15/00	#4	12 hrs @ \$ 160.00/hr Test pumping well	. \$	1,920.00
02/16/00	#4	3 hrs @ \$ 160.00/hr Test pumping well	\$	480.00
02/17/00	#4	5.5 hrs @ \$ 110.00/hr Standby, wait for Hermitt Logger repair	\$	605.00
02/18/00	#4	5.33 hrs @ \$ 110.00/hr Standby, wait for test to start & recovery after test	\$	586.30
		6.67 hrs @ \$ 160.00/hr Test pumping well	\$	1,067.20
02/19/00	#4	14 hrs @ \$ 160.00/hr Test pumping well	\$	2,240.00
02/20/00	#4 ·	24 hrs @ \$ 160.00/hr Test pumping well	\$	3,840.00
02/21/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$	3,840.00
02/22/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$	3,840.00
02/23/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$	3,840.00

PLEASE REMIT TO: BOART LONGYEAR COMPANY, SDS 12-0734, P.O. BOX 86, MINNEAPOLIS, MINNESOTA 55486-0734

Lang Exploratory Drilling a division of Boart Longyear Company 2745 West California Avenue Salt Lake City, Utah 84104-4579 USA Telephone: 801-973-6667 Fax: 801-973-4572



LANG EXPLORATORY DRILLING

15211860 March 1, 2000

DATE	WELL	DESCRIPTION / WORK	•
02/24/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$ 3,840.00
02/25/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$ 3,840.00
02/26/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$ 3,840.00
02/27/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$ 3,840.00
02/28/00	#4	24 hrs @ \$ 160.00/hr Test pumping well	\$ 3,840.00
02/29/00	#4	10 hrs @ \$ 160.00/hr Test pumping well	\$ 1,600.00
		Subtotal	\$ 49,345.50
		TOTAL	\$ 49,345.50

PAYMENT DUE UPON RECEIPT

Lang Exploratory Drining a division of Boart Longyear Company 2745 West California Avenue Salt Lake City, Utah 84104-4579 USA Telephone: 801-973-6667 Fax: 801-973-4572



LANG EXPLORATORY DRILLING

15211880 March 29, 2000

Montreux Joint Venture a Nevada General Partnership 16475 Bordeaux Drive Reno, Nevada 89511 Attention: Mr. Bob Nichols

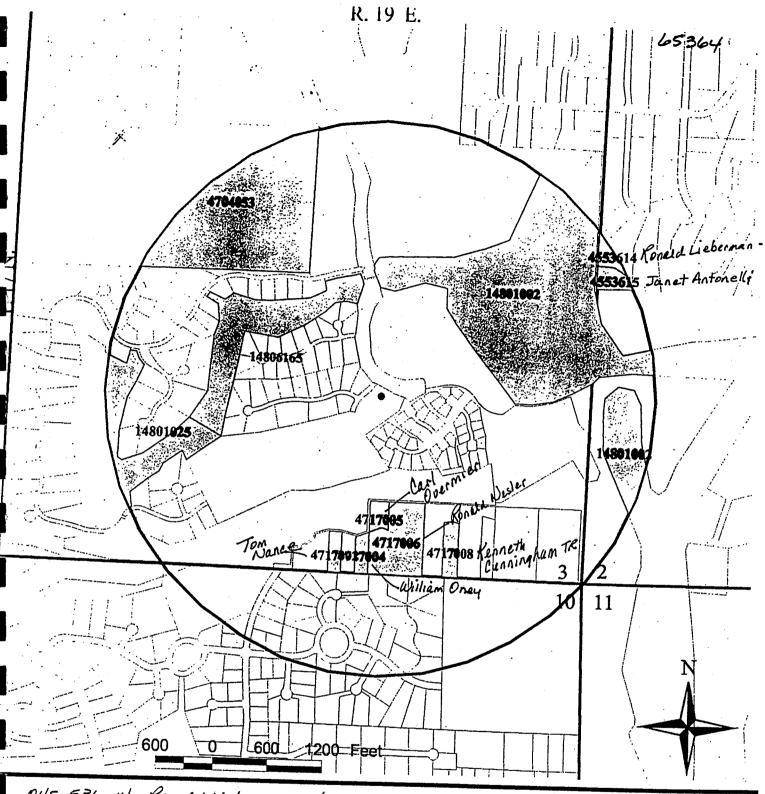
Install, Remove Pump and Develop Well #4 near Reno, Nevada. Operator: Darren Howard. Rig: LX-29. Work Period: March 3, through March 28, 2000.

DATE	HOLE	DESCRIPTION / WORK	
03/03/00	#4	3.5 hrs @ \$ 110.00/hr Standby, wait for client to collect data	\$ 385.00
		Disinfect & surge well	\$ 800.00
03/04/00	#4	390 ft @ \$ 9.00/ft Pulling pump	\$ 3,510.00
03/05/00	#4	149 ft @ \$ 9.00/ft Finish pulling pump	\$ 1,341.00
03/28/00	#4	Video survey of well	\$ 1,200.00
		Gyroscopic deviation survey of well	\$ 1,880.00
		Subtotal	\$ 9,116.00
•		TOTAL	\$ 9,116.00

PAYMENT DUE UPON RECEIPT

APPENDIX E

Domestic Well Information and Data



045-536-14 Ronald Lieberman 5425 Mountain Meadows lane, Reno 84511 (849-0489)
045-536-15 Ms Janet Antonelli 5420 Mountain Meadows Lane, Reno 84511 (721-0211) Lewis
047-170-05 Mr & Mrs Carl Duermier 16175 Lobelia Lane. Reno 84511 (849-9084)
047-170-06 Ronald Nesler 6005 Philoree Lane. Reno 84511 (849-1661)
047-170-02 Tom Nance. 6195 Philoree Lane, Reno 89511 (849-2110 848-8008)
047-170-04 Mr & Mrs William Oney P.O.Bor 71677 Reno 89570 (849-1747) Diane
047-170-08 Kenneth Cunningham. S900 Philoree Lane Reno 89511 (849-2347)



April 12, 2000

Tom Nance 6195 Philoree Lane Washoe County Reno, Nevada 89511

Department of Water Resources Subject: 4930 Energy Way Reno, NV 89502-4106 Tel: (775) 954-4600

Fax: (775) 954-4610

Results from the 10-day pumping test, Mt Rose #6

Dear Mr. Nance:

I would like to document the specifics of your domestic water well and discuss the preliminary results obtained from the ten-day pumping test of the Mt. Rose #6 well. Please find enclosed hydraulic diagrams of your well, a figure of pumping impacts on your well (drawdown) and a record of water level measurements taken during testing.

On February 3, 2000, at the County's request and expense, Bruce MacKay Pump and Well Service, Inc., installed a sounding tube in your well for long-term monitoring purposes. He also conducted a 30-minute pumping test in order to determine the drawdown in your well due to your domestic needs and the available drawdown in your well. Table 1 shows these results.

Well depth (ft)	Pump setting (ft)	Sounding tube depth (ft)	Static water level (ft)	Pumping level (ft)	Discharge (gpm)
356	320	320	262	287	20

The hydraulic diagram of your well illustrates these results. Pumping at 20 gpm for 30 minutes in your well results in 25 feet of drawdown. This is with open discharge, or at the full pumping rate, which is greater than when the well discharges to the pressure tank. There is currently 58 feet of total available drawdown in your well.

On February 19, Washoe County began a ten-day pumping test on the newly constructed Mt. Rose #6 well, located approximately 1,500 feet from your domestic well. Periodic water levels were measured in your well during this time and the ensuing ten-day recovery test. After accounting for barometric pressure effects, a water level decline of 2.5 feet was determined due to the pumping of the Mt. Rose #6. Barometric pressure Ed Schmidt effects groundwater levels in that as pressure decreases, water levels rise and therefore is Director an additive effect. This was the case during testing meaning that water levels measured John M. Collins in your well were decreased more than the manual measurements indicate. The levels Utility Services were adjusted for barometric effects from NWS records taken at the Reno/Tahoe airport.

Leonard E. Crowe, Jr. A full analysis of the long-term effects due to production pumping has not been Planning Manager completed at this time. I expect this to be completed in approximately sixty days. At that Department of time I would like to meet with you at your convenience to discuss the results of this analysis.

ter Resources

Page 2 Tom Nance Mt. Rose #6 April 12, 2000

If you have any questions, please do not hesitate to contact me at 954-4655.

Sincerely,

Michael C. Widmer Hydrogeologist

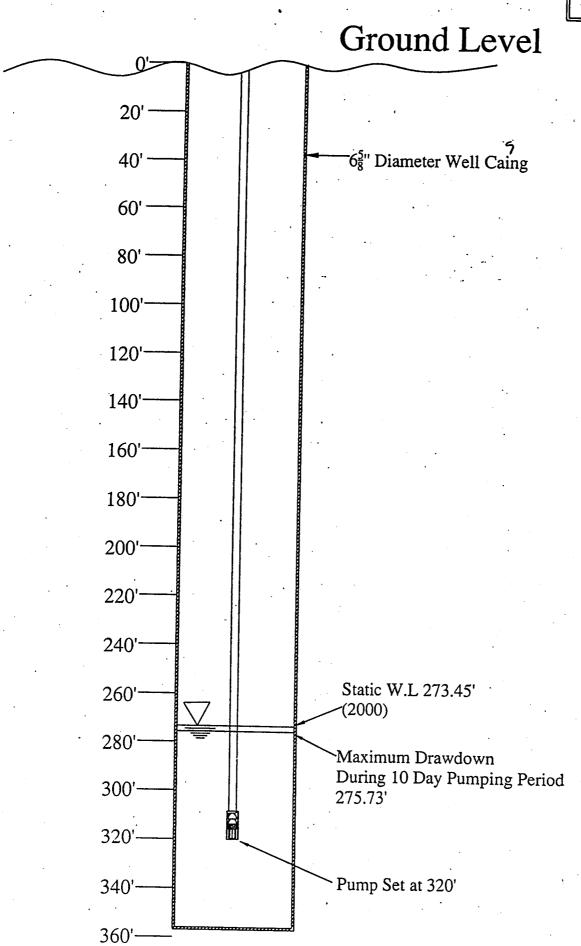
Enclosures

c: John Collins, P.E. Utility Services Manager
Paul Orphan, P.E., Senior Engineer
Dan Dragan, Senior Hydrogeologist
Michael Turnipseed, P.E., State Engineer of Nevada

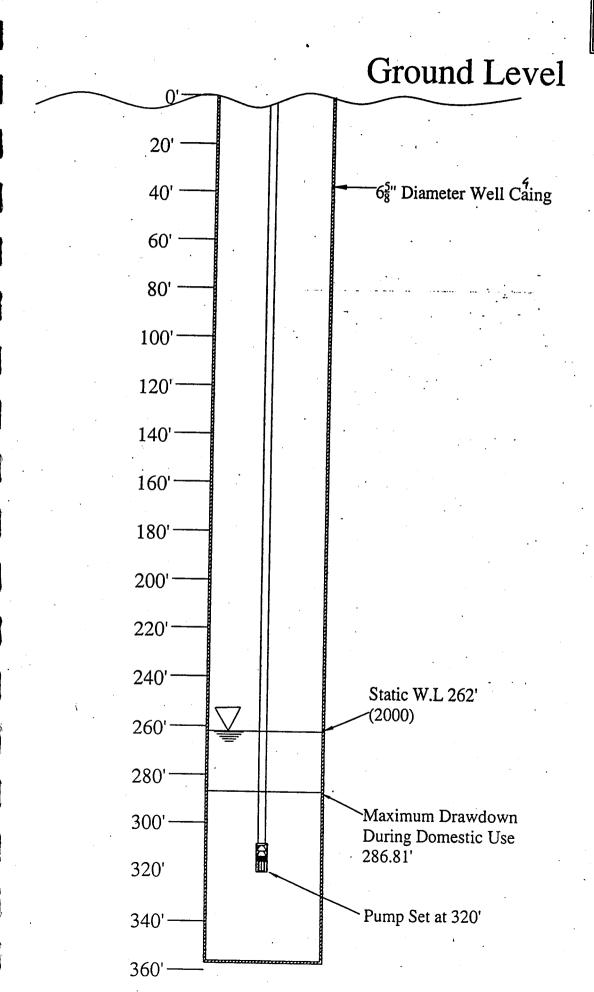
<u>7</u>00 900 w/barometric measured 500 Effects on Nance domestic well 400 end of pumping @ 240 hrs hours since pumping 300 200 100 0 -100 2.5 က N 1.5 0.5 -0.5 0 drawdown (ft)

Mt. Rose #6 Pumping Test

Tom Nance 6195 Philoree Reno, NV 89511



Tom Nance 6195 Philoree Reno, NV 89511



Washoe Co. Health Permit #5032

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

	FIGE USE ONLY
Permit No	
Basin	058
NOTICE OF IN	TENT No: 29235

1. OWNER Tom Nance				NOTICE OF INTENT NO. 29235
MAILING ADDRESS 6195	Philoree	***************************************	ADDRESS AT WELL LOCATION	
	, NV 89511			
2. LOCATION SW 1/4 SE		т	17N	N/S R 19 E Washoe
PERMIT NO	47	7-170-02	·	1 County
3. WORK PERFOR				Subdivision Name
WORK PERFOR	MED Recondition	4.		PROPOSED USE 5. WELL TYPE
	Other		Domestic	Ic
6. LITHOI			мипісіра	Alf U Other
Material	T West	 	T	8. WELL CONSTRUCTION Depth Drilled 356 Feet Depth Cased 356
Brown sand and clay	Strata From		Thick- ness	
	0	50	50	HOLE DIAMETER (BIT SIZE)
w/ boulders Valcanics & Granite	 			9 7/8 Inches 0 Feet 356 Feet
& Quartz	 -			16 Y = -\$.
Brown sand & multi-	50	130	-80	1
colored gravels	120	 		
qravers	130	356	226	CASING SCHEDULE Size O.D. Weight/Ft. Wall Thickness F
				(Inches) (Pounds) (Inches) (Feet) (Feet)
				6 5/8 12.94 .188 +1 356
-				
		+		
				Perforations:
				Type perforation Factory Size perforation 060 x 3" 8 rows From 336 feet to 356 feet
				From 336 factor 356
		+		From feet to
		1		From feet to feet
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99 -				From feet to feet
				Surface Seal: Yes \(\sum \) No Seal Type: Depth of Seal \(\sum \) Neat Cement
<u>ā</u>				
				Placement Method: Pumped
2.2				
				Gravel Packed: X Yes No
				From 100 feet to 356 feet
				9. WATER LEVEL
				Static water level 160? feet below land surface
· · · · · · · · · · · · · · · · · · ·				Artesian flow G.P.MP.S.I.
		 		Water temperature Cold of Quality not tested
Date started 7-21		L		10. DRILLER'S CERTIFICATION
Date started 7-25 Date completed 7-25		,	19.95	This well was drilled under my supervision and the report is true to the best of my knowledge.
and completed			19.95	Name MacKay Pump & Geothermal, Inc.
7. WELL TE				Contractor
TEST METHOD: Baile	r 🗆 Pump	🛛 Air Lift		Address 1600 Mt. Rose Hwy
G.P.M. Draw	v Down slow Static)	Time (Hours)	. 1	Contractor Perco NV 20511
20-25		2		Reno. NV 89511
		<u> </u>		Nevada contractor's license number issued by the State Contractor's Board. 23096
				Nevada driller's license number issued by the
				Division of Water Resources, the on-site driller 1719
				Signed K. Duce Martay
				By driller performing actual drilling on site or contractor
				Date7-25-195



WASHOE JOUNTY

HOW Q MEASURED ELECTRIC SQUIDER

DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

TYPE OF PUMPING TEST _

HOW WL'S MEASURED ___

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Department of
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PUMPING TEST DATA \$ 6195 Philore e CONSTANT Q & RECOVERY

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WASHOE COUNTY WELL ____ **DEPARTMENT OF PUBLIC WORKS** PUMPING TEST DATA PUMPING/OBSERVATION WELL UTILITY DIVISION PUMPING/ RECOVERY DATA TYPE of PUMPING TEST __ PAGE _____ OF _____ PUMPED WELL NO. _ % SUBMERGENCE: initial _____; pumping ____ RADIUS of PUMPED WELL ______ PUMP ON: date _____ time ____ PUMP OFF: date 1/1/00 time DISTANCE from PUMPED WELL _ WATER LEVEL DATA TIME WATER COMMENTS at t'=0 STATIC WATER LEVEL PRODUCT. CLOCK ELAPSED TIME CONVERSIONS READING CORRECTIONS LEVEL WATER t/t^t (NOTE ANY CHANGES IN OBSERVERS) S or S' 0 0 14 0 7.86. 341 286'512" 15 26 30 -20-45=20g FM 286'53/4" 20 25 286 71/4" 286 8 1/2" 30 35 286' 93/11" 286.81 15' 315 4 356 Randie Mike



April 12, 2000

Ken Cunningham 5900 Philoree Lane Reno, Nevada 89511

Washoe County Department of Water Resources Subject: 4930 Energy Way

Reno, NV 89502-4106 Tel: (775) 954-4600 Fax: (775) 954-4610

Results from the 10-day pumping test, Mt Rose #6

Dear Mr. Cunningham:

I would like to document the specifics of your domestic water well and discuss the preliminary results obtained from the ten-day pumping test of the Mt. Rose #6 well. Please find enclosed hydraulic diagrams of your well, a figure of pumping impacts on your well (drawdown) and a record of water level measurements taken during testing.

On February 3, 2000, at the County's request and expense, Bruce MacKay Pump and Well Service, Inc., installed a sounding tube in your well for long-term monitoring purposes. He also conducted a 30-minute pumping test in order to determine the drawdown in your well due to your domestic needs and the available drawdown in your well. Table 1 shows these results.

Well depth (ft)	Pump setting (ft)	Sounding tube depth (ft)	Static water level (ft)	Pumping level (ft)	Discharge (gpm)
275	262	265	209	223	12

The hydraulic diagram of your well illustrates these results. Pumping at 12 gpm for 30 minutes in your well results in 14 feet of drawdown. This is with open discharge, or at the full pumping rate, which is greater than when the well discharges to the pressure tank. There is 50 feet of total available drawdown in your well.

On February 19, Washoe County began a ten-day pumping test on the newly constructed Mt. Rose #6 well, located approximately 1,500 feet from your domestic well. Periodic water levels were measured in your well during this time and the ensuing ten-day recovery test. After accounting for barometric pressure effects, a water level decline of 4.21 feet was determined due to the pumping of the Mt. Rose #6. Barometric pressure Ed Schmidt effects groundwater levels in that as pressure decreases, water levels rise and therefore is Director an additive effect. This was the case during testing meaning that water levels measured John M. Collins in your well were decreased more than the manual measurements indicate. The levels Utility Services were adjusted for barometric effects from NWS records taken at the Reno/Tahoe airport.

Conard E. Crowe, Jr. A full analysis of the long-term effects due to production pumping has not been Water Resources A full analysis of the long-term effects due to production pumping has not been Planning Manager completed at this time. I expect this to be completed in approximately sixty days. At that Department of time I would like to meet with you at your convenience to discuss the results of this analysis.

ater Resources

Page 2 Ken Cunningham Mt. Rose #6 April 12, 2000

If you have any questions, please do not hesitate to contact me at 954-4655.

Sincerely,

Michael C. Widmer Hydrogeologist

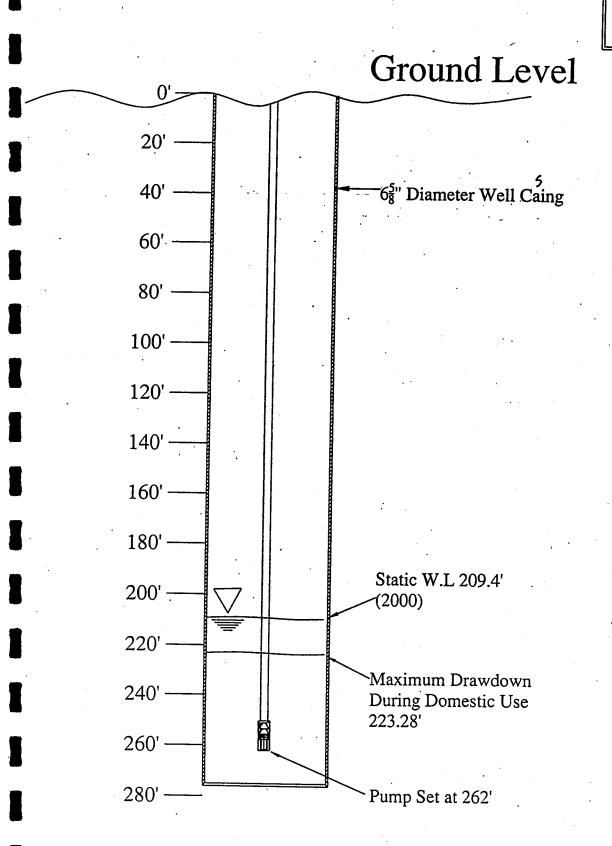
Enclosures

c: John Collins, P.E. Utility Services Manager
Paul Orphan, P.E., Senior Engineer
Dan Dragan, Senior Hydrogeologist
Michael Turnipseed, P.E., State Engineer of Nevada

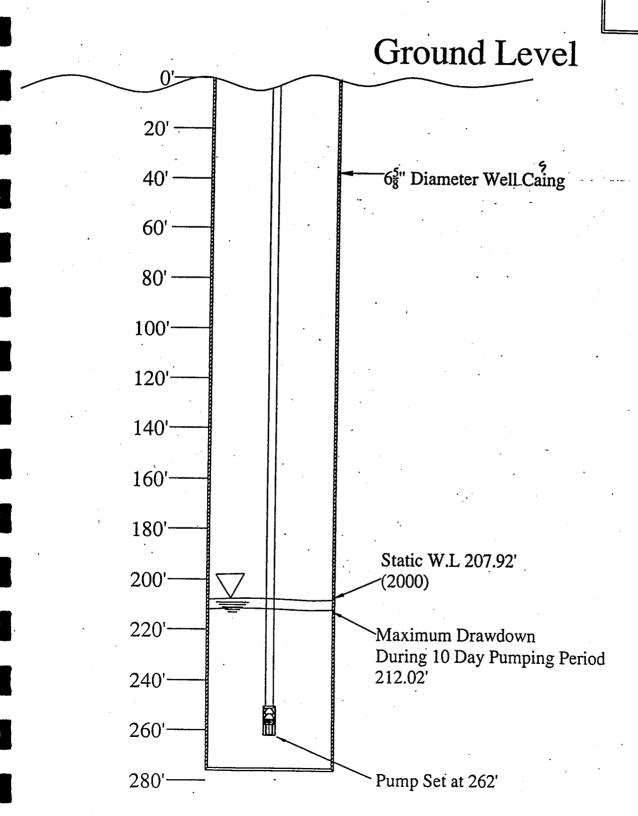
200 w/barometric measured 400 end of pumping @ 240 hrs Effect on Cunningham domestic well 300 hours since pumping began 200 100 -100 S ო 0 drawdown (ft)

Mt. Rose #6 Pumping Test

Cunningham 5900 Philoree



Cunningham 5900 Philoree





WASHOE COUNTY

DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION

TYPE OF PUMPING TEST HOW Q MEASURED _

HOW WL'S MEASURED PUMPED WELL NO. _

RADIUS of PUMPED WELL

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PUMPING / F	ECOVERY D	ATA
PAGE	OF	- 110



PUMPING TEST DATA CONFIRMT Q & RECOVERY

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WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS UTILITY DIVISION

TYPE of PUMPING TEST _

PUMPING TEST DATA

WELL _	نممما	maha	مطة
PUMPING	/OBSERV	NOTA	WELL
PUMPING	/ RECOVE	ry da'	TA
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HO	W Q M	MEASUR	CLIDEO KFD					M.P. for	WL's -			elev
HU Su	W WLS	MEA	שאטפ					DEPTH	of PUMP	/AIRLIN	IE	wrt
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DIS	TANCE	from	PUMPE	D WEL	L			PUMP OF	F: date		t	ime
	TI	ME]	WATER LEVE	L-DATA	\ .			TER	
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April 12, 2000

Diane Oney 6085 Philoree Lane Reno, Nevada 89511

Washoe County Department of Water Resources Subject: 4930 Energy Way

Reno, NV 89502-4106 Tel: (775) 954-4600 Fax: (775) 954-4610

Results from the 10-day pumping test, Mt Rose #6

Dear Ms. Oney:

I would like to document the specifics of your domestic water well and discuss the preliminary results obtained from the ten-day pumping test of the Mt. Rose #6 well. Please find enclosed hydraulic diagrams of your well, a figure of pumping impacts on your well (drawdown) and a record of water level measurements taken during testing.

On February 1, 2000, at the County's request and expense, Bruce MacKay Pump and Well Service, Inc., installed a sounding tube in your well for long-term monitoring purposes. He also conducted a 30-minute pumping test in order to determine the drawdown in your well due to your domestic needs and the available drawdown in your well. Table 1 shows these results.

Well depth (ft)	Pump setting (ft)	Sounding tube depth (ft)	Static water level (ft)	Pumping level (ft)	Discharge (gpm)
320	300	300	255	296	21

The hydraulic diagram of your well illustrates these results. Pumping at 21 gpm for 30 minutes in your well results in 41 feet of drawdown. This is with open discharge, or at the full pumping rate, which is greater than when the well discharges to the pressure tank. There is currently 45 feet of total available drawdown in your well.

On February 19, Washoe County began a ten-day pumping test on the newly constructed Mt. Rose #6 well, located approximately 1,500 feet from your domestic well. Periodic water levels were measured in your well during this time and the ensuing ten-day recovery test. After accounting for barometric pressure effects, a water level decline of 2 feet was determined due to the pumping of the Mt. Rose #6. Barometric pressure effects groundwater levels in that as pressure decreases, water levels rise and therefore is an Director additive effect. This was the case during testing meaning that water levels measured in John M. Collins your well were decreased more than the manual measurements indicate. The levels were Utility Services adjusted for barometric effects from NWS records taken at the Reno/Tahoe airport. Manager

Leonard E. Crowe, Jr. A full analysis of the long-term effects due to production pumping has not been Planning Manager completed at this time. I expect this to be completed in approximately sixty days. At that Department of time I would like to meet with you at your convenience to discuss the results of this analysis.

ater Resources

Page 2 Diane Oney Mt. Rose #6 April 12, 2000

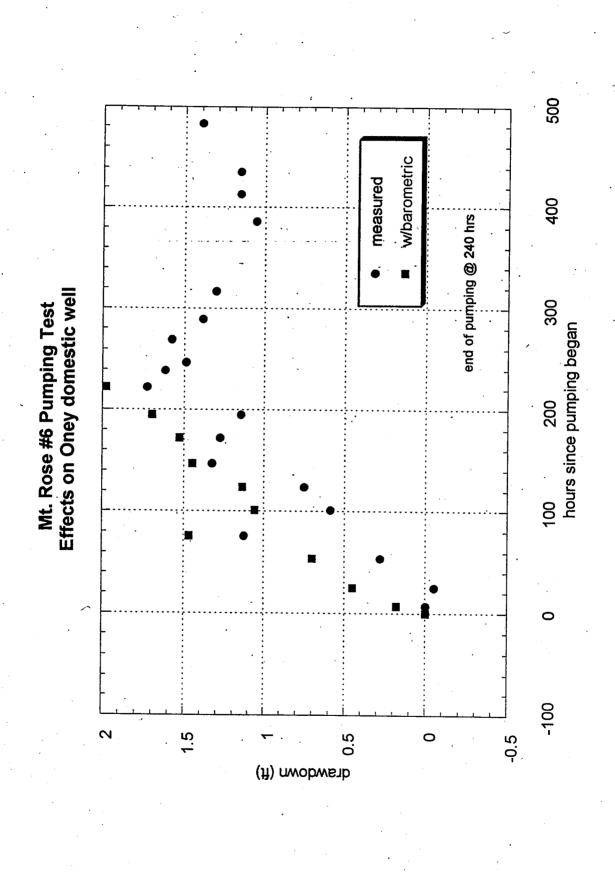
If you have any questions, please do not hesitate to contact me at 954-4655.

Sincerely,

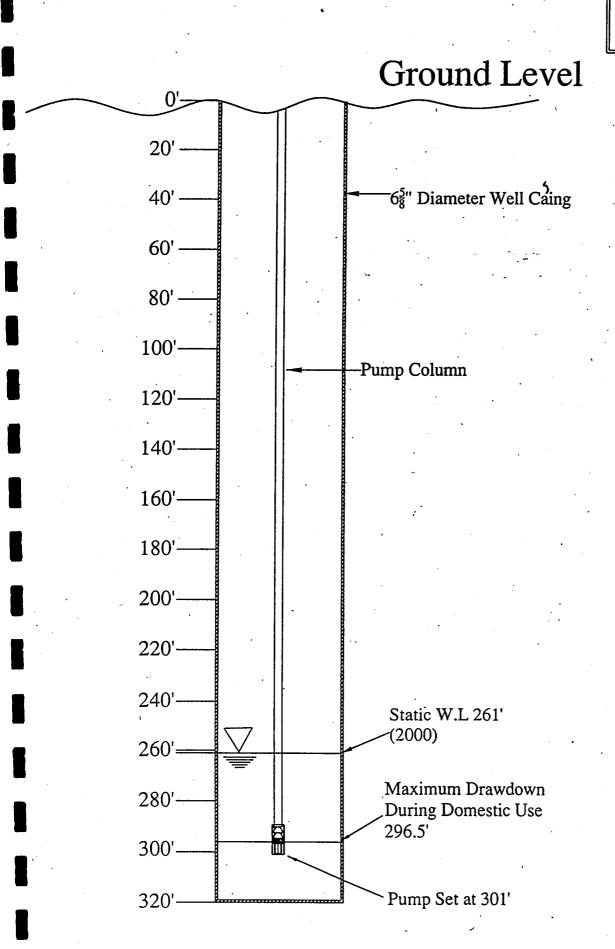
Michael C. Widmer Hydrogeologist

Enclosures

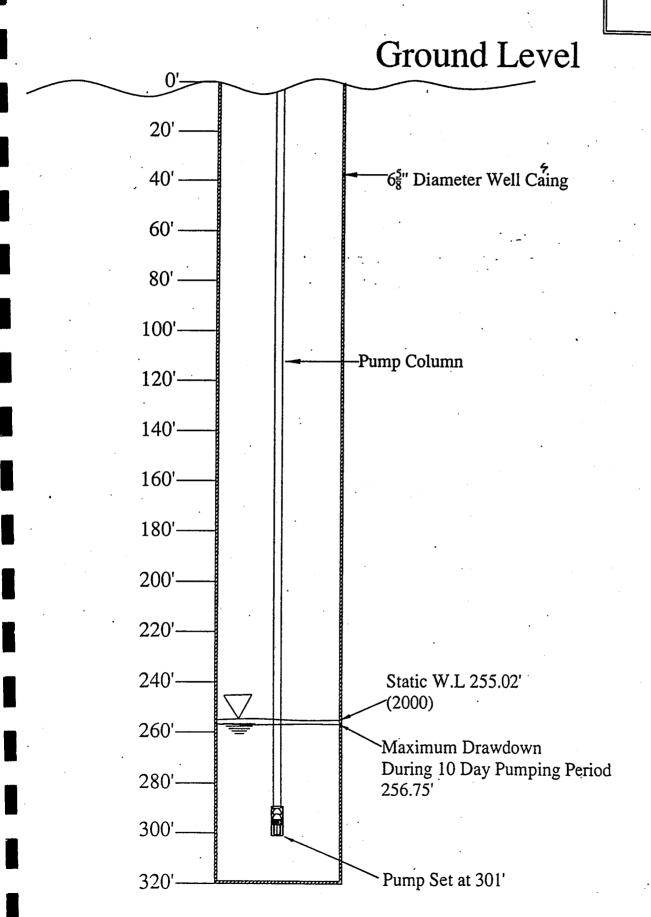
c: John Collins, P.E. Utility Services Manager
Paul Orphan, P.E., Senior Engineer
Dan Dragan, Senior Hydrogeologist
Michael Turnipseed, P.E., State Engineer of Nevada



Bill and Diane Oney 6085 Philoree



Bill and Diane Oney 6085 Philoree





Water Resources

WASHOE COUNTY

DEPARTMENT OF WATER RESOURCES
UTILITY SERVICES DIVISION

٠	Pl	JN	IPI	Ne	TEST	n	

VELL Onew-Next	door to
PUMPING OBSERVATION WELL PUMPING RECOVERY DATA	Nance
PAGE OF _ I	

Behind house toward be	ack corne
of lot follow rack h	

TYPE OF PUMPING TEST CONSTANT Q : RECOVERY	of lot, follow rock bordon
HOW & MEASURED _ FUECTIC SOULDER	M.P. for Wile
HOW WL'S MEASURED	DEDTH OF DUMPARENTE
PUMPED WELL NO. MONTYCHIK WELL (MR6)	W. STIPMERCENIOR THE WIT
RADIUS of PUMPED WELL	% SUBMERGENCE: initialpumping
DICTALIOCA	PUMP ON: date 2/19/00 time 1005
	PUMP OFF: date 2/29/00 time 1005

		t = :	TIME	t t'=0)	STATIC	WATER LEVE	EVEL D	OATA 2			ATER DUCT	COMMENTS
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25 :::	13:30		8845	ļ		256.35			1.33		 		JJ Stilling Well Pepa
	1350		10305			256.30			1.28	<u> </u>	 		Mer Striffing Well Febru
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, ,	1105		17340			256.60			1.58				MARIN
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WASHOE COUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

TYPE of PUMPING TEST

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PUMPING TEST DATA

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PUMPING PUMPING	/OBSERV	ATION	WELL
PAGE	OF	NI DA	IÀ

HO	W WL's	MEAS	SURED		Soundie	y tube		DEPTH	of PUMP/	'AIRLIN	E <u>~30</u>) wrt	
PUMPED WELL NO INSTANCE from PUMPED WELL								_ % SUBMERGENCE: initial; pumping					
								PUMP ON	N: date_		ime		
DIS	TANCE	from	PUMPE	D WELI	L			PUMP OF	F: date .	2-1-0	<u>20_ ti</u>	me	
t =		ME at t	'=0		STATIO	WATER LEVE	261-	_		ER DUCT.	COMMENTS		
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STATE OF NEVADA DIVISION OF WATER RESOURCES

PRINT OR TYPE ONLY

WELL DRILLER'S REPORT

Log No. 37899	
Permit No	::
Basin 6-88	

TRINI OR TIPE ONLY		Please	complete th	s form in its entirety
I. OWNER Bill	and Dia	ne Onev		NOTICE OF INTENT NO. 13007
MAILING ADDRESS P. O	. Box 71	677	***************************************	NOTICE OF INTENT NO. 13007 ADDRESS AT WELL LOCATION
	,	<i>3 1 U</i>		· · · · · · · · · · · · · · · · · · ·
2. LOCATIONSW 1/4	se ¼ Sec	3 .	r 17	Licharda III
PERMIT NO		47-040	-23	N/S R. 19 E WASHOE County - Galena Subdivision Name
Issued by Water Res	onicez	Parcel	No.	Subdivision Name
3. TYPE OF WOL	RK		4.	PROPOSED USE 5. TYPE WELL
•	condition	□	Domestic	XX Irrigation
Deepen 🗆 Ot	her (□	Municipal	☐ Industrial ☐ Stock ☐ Other ☐ Mud
6. LITHOI	LOGIC LOG			
				"" "" "" "" "" " " " " " " " " " " " "
Material	Water Strata	rom T	Thick-	,
D.G. & cobbles		0 6	0 60	inchesinches
				Casing record 6 5/8 inch
D.G. soft fine sand		60 16	4 104	Weight per foot 10.78 Thickness .156
	· .			Diameter From To
D.G.	1	54 19	8 34	6 5/8 inches + 2 feet 319 feet
D. C.	 			inches feet feet
D.G med hard	1	98 24	3 45	inches feet feet
D.G hard				inchesfeetfeet
D.G nard		13 26	5 22	inchesfeetfeet
D.G Med hard				inchesfeetfeet
D.G Hed hard	20	55 31	9 54	Surface seal: Yes XX No Type grout
,				Depth of sealfeet
T.D. 319 feet				Gravel packed: Yes XX No □
				Gravel packed from 50 feet to 319 feet
				╣ 。
			· .	Perforations: factory
				Type perforation 1actory Size perforation 3/32 X 3
				279
				From feet to 255 feet From feet to feet
				From feet to feet
	·			From feet to feet
				From feet to feet
- 2;				9. WATER LEVEL
==	<u>:</u>			Static water level 20 GRM feet below land surface
	:			11 1 10 W
Date started 7/3/89	·			Water temperature cold of Quality good
Date completed.	< 7/6/89		, 19	10. DRILLER'S CERTIFICATION
			, 19	This well was drilled under my supervision and the report is true to the
7. WELL T	EST DATA	ı		best of my knowledge.
Pump RPM G.P.M.		T		Name Aqua Drilling & Well Service, Inc.
Pump RPM G.P.M. Blew with air to clear	Draw Down		Hours Pump	Contractor Address 625 Spice Islands Dr Suite L Sparks,
Jiew with all to clear	and dev	erop.	······	Contractor 89431
				Nevada contractor's license number issued by the State Contractor's Board
				Nevada contractor's driller's number issued by the Division of Water Resources
	ER TEST	,		Nevada driller's license number issued by the Division of Water Resources, the onlaite driller.
	aw down			Signed Signed
	aw down			By driller performing actual drilling on site or contractor
G.P.M Dra	aw down	feet	hours	Date Roger M. Thrall 7/7/89



April 12, 2000

Ron Nessler 6005 Philoree Lane Reno, Nevada 89511

Washoe County Department of Water Resources Subject: 4930 Energy Way Reno, NV 89502-4106

Tel: (775) 954-4600 Fax: (775) 954-4610

Results from the 10-day pumping test, Mt Rose #6

Dear Mr. Nessler:

I would like to document the specifics of your domestic water well and discuss the preliminary results obtained from the ten-day pumping test of the Mt. Rose #6 well. Please find enclosed hydraulic diagrams of your well, a figure of pumping impacts on your well (drawdown) and a record of water level measurements taken during testing.

On February 3, 2000, at the County's request and expense, Bruce MacKay Pump and Well Service, Inc., installed a sounding tube in your well for long-term monitoring purposes. He also conducted a 30-minute pumping test in order to determine the drawdown in your well due to your domestic needs and the available drawdown in your well. Table 1 shows these results.

Well depth (ft)	Pump setting (ft)	Sounding tube depth (ft)	Static water level (ft)	Pumping level (ft)	Discharge (gpm)
281	279	280	249	256	21

The hydraulic diagram of your well illustrates these results. Pumping at 21 gpm for 30 minutes in your well results in 7 feet of drawdown. This is with open discharge, or at the full pumping rate, which is greater than when the well discharges to the pressure tank. There is currently 30 feet of total available drawdown in your well.

On February 19, Washoe County began a ten-day pumping test on the newly constructed Mt. Rose #6 well, located approximately 1,500 feet from your domestic well. Periodic water levels were measured in your well during this time and the ensuing ten-day recovery test. After accounting for barometric pressure effects, a water level decline of 3.65 feet was determined due to the pumping of the Mt. Rose #6. Barometric pressure effects groundwater levels in that as pressure decreases, water levels rise and therefore is Director an additive effect. This was the case during testing meaning that water levels measured John M. Collins in your well were decreased more than the manual measurements indicate. The levels Utility Services were adjusted for barometric effects from NWS records taken at the Reno/Tahoe airport. Manager

Leonard E. Crowe, Jr. A full analysis of the long-term effects due to production pumping has not been Planning Manager completed at this time. I expect this to be completed in approximately sixty days. At that Department of time I would like to meet with you at your convenience to discuss the results of this analysis.

ater Resources

Page 2 Ron Nessler Mt. Rose #6 April 12, 2000

If you have any questions, please do not hesitate to contact me at 954-4655.

Sincerely,

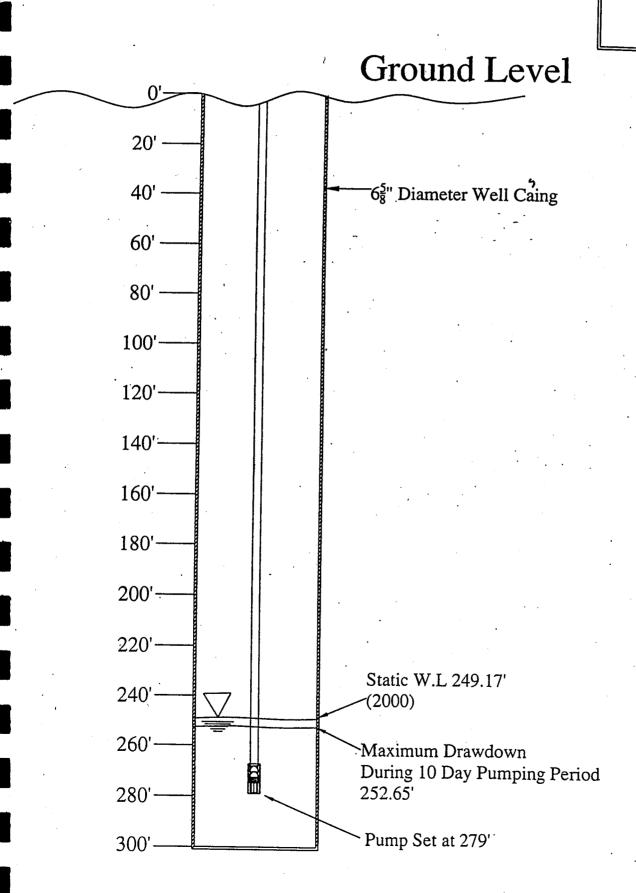
Michael C. Widmer Hydrogeologist

Enclosures

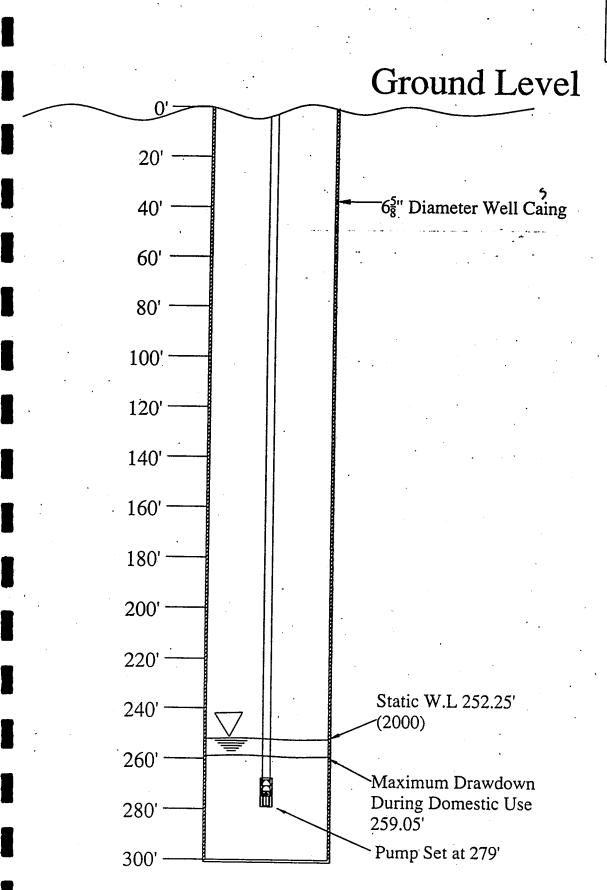
c: John Collins, P.E. Utility Services Manager
Paul Orphan, P.E., Senior Engineer
Dan Dragan, Senior Hydrogeologist
Michael Turnipseed, P.E., State Engineer of Nevada

500 w/barometric · measured 400 end of pumping @ 240 hrs 300 100 200 to hours since pumping began -100 ო 0 0 drawdown (ft)

Mt. Rose #6 Pumping test Effects on Nessler domestic well



Ron & Tina Nessler





WASHOE JOUNTY

DEPARTMENT OF WATER RESOURCES UTILITY SERVICES DIVISION .

PU	MP	ING	TEST	DATA

NELL Nesslev		
PUMPING (OBSERVATION WELL)	 	_
PUMPING / RECOVERY DATA	•	
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PUM	IFING IEST DATA	Well is grostence in innk s
TYPE OF PUMPING TEST CONSTRUT Q	RECONTRA	Court off main road, near me
HOW Q MEASURED		
HOW WL'S MEASURED	M.P. for	elev.
PUMPED WELL NO MR6		OF PUMP/AIRLINE wrt
RADIUS of PUMPED WELL		MERGENCE: initial pumping_
DISTANCE from PUMPED WELL		DN: date 2/19/00 time 1005
	PUMP O)FF: date 2/29/40 5-1

			DISTANC	E from F	PUMPED	WELL				JMP ON: da JMP OFF: d			timetime
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WASHOE CLUNTY

DEPARTMENT OF PUBLIC WORKS
UTILITY DIVISION

PUMPING TEST DATA

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PUMPING PUMPING	/OBSER\ /RECOVE	ATION	WELL FA
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DIS	STANCE	from	PUMPE	ED WEL	<u> </u>		 ,	PUMP OF	F: date			ime	
TIME WATER LEVEL DATA											TER DUCT.	COMMENTS	
CLOCK TIME	mins hrs	SED T	IME t'	1/1	READING	CONVERSIONS CORRECTIONS	WATER LEVEL	S or S'		1	Q	(NOTE ANY CHANGES IN OBSERVERS)	
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		3					257,35			1	1		
		J					257,74				20	End in IHear	
		5					258.00		-		1	5 gal in 14 sec.	
		J					258.20			1	1	· ·	
		8		1. /			258.43					=4 stickup	
		10					258.56	,				2 / 3/10/47	
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STATE OF NEVADA DIVISION OF WATER RESOUR ;

WELL DRILLERS REPORT

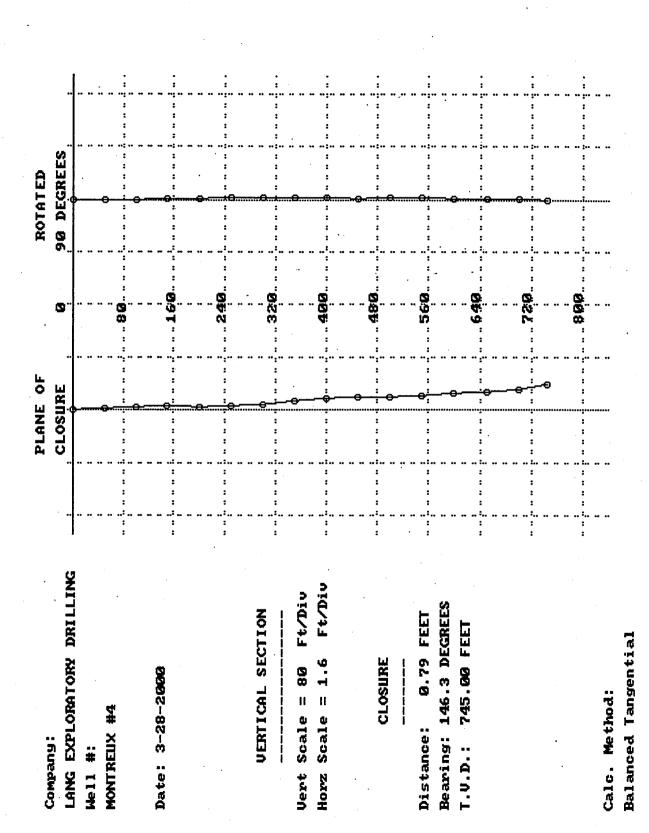
Please complete this form in its entirety

OFFICE USE ONLY Log No. /59/4/	
Permit No	••••
Basin	•••

1. OWNER Ron & Tina	a Nes	sler	·····	***************	ADDRESS 444 12 th Street
***************************************	E 4	Sec	ξ		Sparks, Nevada 89431 7.N N/S R 19 E Washoe Cour
	Kecondition	n []		omestic 1	- Caule II Knistv
6. LITHOLO	GIC LO	G			8. WELL CONSTRUCTION
Material	Water Strata	From	То	Thick- ness	Diameter hole
Large boulders to 4' diameter mixed w					Casing record 0-300 X 6 5/80D Weight per foot 12 89 Thickness 188
decomposed granite				· ·	Diameter From To
sand & some brown c		0	31	31	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
As above but fewer]	ould				inchesfeet
(approx. 3%)	<u> </u>	31	86_	55	inches feet feet
Fine to coarse decor granite sand w/ app	pose	a	<u> </u>	<u> </u>	inchesfeetfeet
4% brown clay mixed	rox.	86	110	24	feet feet feet
As above but more f	7°M	- 00		-24	Surface seal: Yes on North Tune transit mix
& less clay- possib					Depth of seal 50 fe
very weathered gran-	te	110	120	10	Gravel packed: Yes No KK
As above but more c	lay	120	223	103	Gravel packed from feet to feet
Inconsistantly hard					Perforations:
& soft but becoming					Type perforation factory mill slot
-more consistantly ha	erd			·	Size perforation. 1/8 X 2½"
as depth increases.					From 2.60 feet to 300 fee
Picked up some wate	c				From feet to fee
260-270' depth.	1.				Fromfeet tofee
Formation appears to granite from approx) be				Fromfeet tofeet
270' depth.		223	300	77	From feet to fee
are aepoit.		~~	_500		9. WATED I EVEL
					Static water level
·					Water temperature cold to Do St.
	<u> </u>				Water temperaturecold. F. Qualitynot. tested
Date started 8-2-76			• •		10. DRILLERS CERTIFICATION
Date completed 8-6-76))	This well was drilled under my supervision and the report is true the best of my knowledge.
7. WELL TES	T DATA				Name W.L. McDonald & Co.
Pump RPM G.P.M.	Draw Dow	n Afi	ter Hours P	ump	
AIR BLOWN: 5GPM + @ (Well appears to be	2601	depth	2 2 2 2 2	lucin	Address P.O. Box 404; Sparks, Nevada
<u> more water- loosing</u>	air	in fo	rmati	on.	Nevada contractor's license number. 9767
To be pump tested a	LE Lai	ter da	De 14	3 DED	Nevada driller's license number
<i>Hump tested 10-30-76</i> Bailer	TEST	7 C-F//	מארה שי	DED	Signed for Betile light DD
G.P.M Dra				ti	TOTAL TOTAL
	w down	fcet		hours	Tony Betita by: W. L. McDonald
_		feet feet			Tony Betita by: W.L. McDonald Date 9 August, 1976

APPENDIX F

Plumbness and Alignment Data



Mount Rose Well 6 Well Coordinates

Elevation		5749 7	5697.4	5750 G	5734.2	5713.6	5674.7
>		0	455	-1278	-1306	-1547	-1239
×		0	860	-344	-100	172	768
et from MR6	calculated	0	973	1324	1310	1557	1458
Feet from MR6 Feet from MR6	graphic	0	974	1325	1314	1558	1463
ш		2271199.4	2272059.8	2270855.6	2271099.4	2271371.3	2271967.2
Z		14805928.9	14806384.2	14804650.6	14804623.0	14804382.4	14804690.3
Well		MR6	MR5(Cinder)	Nance	Oney	Nessler	Cunningham .